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AN OUTBREAK OF PSITTACOSIS AT THE LONDON ZOOLOGICAL GARDENS

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In all probability latent infection with psittacosis virus has always been present to a certain extent among the birds of the parrot house in the Zoological Gardens. We have in fact some evidence that this was so eight years ago, for Gordon (1930) was able to isolate the virus from two out of eight spleens removed from birds of the parrot family in the Zoological Society's collection, both positive spleens coming from apparently normal birds. Up to 1938, however, no cases of psittacosis had been recognized among the keepers of the parrot house. In February and March of last year a small outbreak occurred involving five members of the Zoological Society's staff, and since conditions allowed of a fairly complete investigation of this outbreak it was thought that it might be of interest to record the findings.

History of the Outbreak

On February 7, 1938, a collection of parrots from South America and the West Indies was received by the Zoological Society. These birds were transported from Southampton by the Zoological Society's staff. On arrival at Regent's Park the parrots were found to be in poor condition and were placed in the Society's sanatorium, there to be kept under observation. On February 11 it was thought that their condition had improved, so they were transferred to the sanatorium room of the parrot house, where they were isolated from the rest of the inmates. Five members of the staff of the parrot house (four keepers and an assistant curator) fed and looked after the birds in question. On February 20 one of the keepers went on holiday and subsequently became ill. He was first seen by one of us (R. A.) on March 1, and was found to be suffering from a bronchopneumonia. On February 21, a Monday, a second keeper was reported to be ill; he had been seen by one of us (R. A.) two days earlier. Five days later, February 26, a third keeper went sick, and on March 5 the assistant curator fell ill. Thus nine days after the birds had been transferred to the parrot house illness appeared among the attendant staff, and within thirteen days four out of five of the men concerned had gone down with a febrile illness accompanied by respiratory symptoms of varying severity. The fifth case was not among the immediate contacts, but occurred in a man who was temporarily employed on the staff of the sanatorium, and who had access to the room in which the suspected birds had been housed, though he was not concerned with looking after them. He fell ill on February 26 and was admitted to Willesden Municipal Hospital on March 4. This illness ended fatally on the seventeenth day of the disease, and the clinical and post-mortem findings are recorded below by one of us (A. G. T.) in detail. The main epidemiological data are set out in Table I.

TABLE I

Person	Exposure to Infection			Date of Onset of Illness	Outcome of Illness	Laboratory Findings		
	Earliest Date	Degree	Nature of Work			Serum (C.F. Test)	Sputum	Tissues P.M.
J. B.	Feb. 7	Direct	Handled cages in transit from Southampton to London. R. fed and cleaned birds for 14 days	Well				
R.	,,	,,		,,				
P.	,,	,,		,,				
M.	,,	,,		,,				
A.	Feb. 11	,,	Parrot house staff who looked after birds in the parrot house sanatorium	,,		−		
C.	,,	,,		Feb. 20	Recovery	+	+	
J. P.	,,	,,		,, 21	,,	+	−	
An.	,,	,,		,, 26	,,	+		
B.	,,	,,		Mar. 5	,,	+		
H.	Mar. 9	,,	Members of staff of "dead house." Handled living and dead infected birds	Well				
L.	,,	,,		,,				
D. P.	,,	,,		,,				
J.	,,	,,		,,				
K.	,,	,,		,,				
C. H.	Feb. 7	Remote	Sanatorium staff who had access to room in which the parrots were kept from Feb. 7 to 11 and possible contact with utensils used for these birds. The duties of S. included emptying into sanitary cart of bins containing the cage-cleanings from the suspected birds	,,				
T.	,,	,,		,,				
W.	,,	,,		,,				
N.	,,	,,		,,				
Wh.	,,	,,		,,				
D. D.	,,	,,		,,				
D.	,,	,,		,,				
He.	,,	,,		,,				
Wa.	,,	,,		,,				
S.	,,	,,		Feb. 26	Died	+		+

In view of this state of things Dr. G. M. Vevers, superintendent to the Zoological Society, and Colonel A. E. Hamerton, the society's pathologist, inspected the newly arrived birds in the parrot house sanatorium (March 9). The birds were found to be in poor condition, and one, a macaw, was obviously ill. The birds were moved back to the sanatorium, and the following day the macaw died and a second one, appearing very ill, was killed. A post-mortem examination of the former bird was suggestive of psittacosis, and the organs were sent to the London Hospital for further investigation. The second macaw also showed suggestive post-mortem findings, but microscopical examination of spleen smears (Colonel Hamerton, personal communication) failed to reveal any virus. A Cuban parrot which had been in the parrot house for over a year and which had been placed in isolation in the parrot house sanatorium because of feather-plucking, and had therefore been in contact with the suspected birds, was found on March 15 to be suffering from green diarrhoea and a watery discharge from the beak. When killed and examined the post-mortem appearances were those of psittacosis and spleen smears showed the presence of psittacosis virus (Colonel Hamerton, personal communication). A Guilding's parrot which had been in the Zoological Society's collection for about four years became acutely ill with severe diarrhoea on March 13 and died the next day; it had not been directly exposed to infection from the newly arrived batch of birds. Smears of the spleen of this bird showed the presence of virus (Colonel Hamerton, personal communication); the organs were sent to the London Hospital for a more complete examination. It is not known how infection was carried to this bird. All the remaining birds in the newly arrived batch, as well as the contacts of the Cuban parrot and Guilding's parrot, were then destroyed. The parrot house was closed to the public on March 14.

Clinical History of the Five Human Cases

Only three of the cases—J. P., C., and S.—were seen by the authors (R. A. and A. G. T.) responsible for this part of the paper. The details concerning the other two have been supplied by Colonel Hamerton.

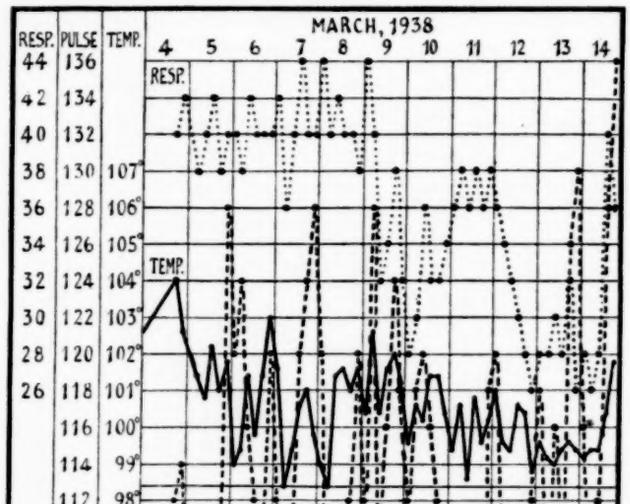
Case An.—Fell ill February 26, fifteen days after first exposure to infection. Attended by panel doctor, who diagnosed the condition as influenza. Remained in bed one week. Returned to work on March 14. A specimen of blood was collected on March 15 for serological examination.

Case B.—Became ill on March 5, twenty-two days after first exposure to infection. Attended by private doctor, who made the diagnosis of influenza. Irregular temperature for a few days, with slight respiratory symptoms. Returned to work March 14. Blood collected for serological examination March 15.

Case J. P.—First seen by one of us (R. A.) on February 19, when he was complaining of headache, backache, abdominal discomfort, lack of appetite, and insomnia. His temperature was 102° F.; there was no sore throat, nor were there any signs in the chest. Little change occurred in the state of this patient until February 23, when sharp colicky pains developed, relieved only by morphine. On this day slight cough, with some dullness and a few moist sounds at the left base, was noted. His condition remained unchanged until February 28, when his temperature began to fall. By March 3 temperature was normal and he felt better, though there was still some cough. Convalescence was slow. Samples of blood and sputum were collected for examination on March 14.

Case C.—Was taken ill on February 20 whilst away on holiday. He returned home on February 28 and was first seen by one of us (R. A.) on March 1. He then had cough and some dyspnoea; the sputum was blood-stained. His temperature was 102° F. and labial herpes was present. Scattered pneumonic patches were detected. The picture presented by the patient subsequently was that of bronchopneumonia with copious blood-stained sputum. Insomnia was marked, and morphine was required for its relief. His temperature began to fall on March 10 and by the 15th it was normal. Convalescence was slow. Specimens of blood and sputum were collected for examination on March 15.

Case S.—As already stated, this man was a member of the sanatorium staff and had access to the room in which the suspected birds were housed from February 7 to 11, but it is not known whether he actually went into this room. His work was in the sanatorium yard, where one of his duties consisted in emptying into the sanitary cart the bins containing the droppings from the parrots. On February 22 he was transferred to the quarantine station, and he first fell ill on February 26, though he remained at work until March 1, when he went to see his doctor. He then complained of general aching pains and malaise, shivering, and some diarrhoea, and his doctor sent him home to bed. On March 4 he was admitted to the Willesden Municipal Hospital as a suspected case of enteric fever under the care of one of us



The Chart of Case S.

(A. G. T.). On admission to hospital he looked ill and exhausted. His temperature was 104° F., his pulse 112, and respirations 40. The spleen was not enlarged and there was no rash. The tongue was furred and the mouth dry. He was inclined to be somnolent and lethargic, and these symptoms got much more marked as the disease progressed. He could, however, be roused, and he answered questions in a rational manner until towards his death, when he became comatose. During most nights he was restless; on a few occasions he was violently excited and attempted to get out of bed, these symptoms alternating with delirium of a muttering type. Apart from the progressive lethargy there were no other nervous manifestations or localizing signs of involvement of the nervous system, and the fundi were normal. Headache has been described as a constant feature of this disease. It was, however, absent in this case. On March 7 a troublesome dry cough developed, and there were physical signs of congestion of the bases of both lungs with impaired resonance and a few crepitations. There was never any sputum. On the following

day it was noticed that the patient was slightly jaundiced. He complained on a few occasions of chilliness, but he never had a definite rigor. The urine showed the presence of albumin, but no other abnormality. The patient (whose chart we reproduce on the preceding page) died on March 14.

During the course of this patient's illness the following laboratory investigations were made at the Willesden Municipal Hospital.

Laboratory Investigations of Case S.

Blood Culture.—Culture made on March 5 (eighth day of disease) gave the growth of a Gram-negative diplococcus. This bacterium grew readily on agar and more readily at room temperature than at 37° C., and on blood agar it produced yellowish colonies. It fermented glucose with the production of acid, but was without action on lactose, saccharose, or maltose, and was not agglutinated by meningococcal antisera. It probably belonged to the *flavus* group of the Neisseria. A similar organism was isolated from the blood later in the disease.

Widal Reaction.—The presence of agglutinins for *Bact. typhosum* and *Bact. paratyphosum* A and B, and *Brucella abortus*, was tested for on March 6 (ninth day of disease) and March 13 (sixteenth day of disease). The patient was an ex-soldier, and had received prophylactic inoculation against enteric fever. The findings were as follows:

	Titre of serum	
	March 6	March 13
Bact. typhosum (H)	1 in 250	1 in 250
„ „ (O)	<1 in 25	<1 in 25
„ paratyphosum A (H)	1 in 50	1 in 50
„ „ B (H)	1 in 50	1 in 50
„ „ „ (O)	<1 in 25	<1 in 25
Br. abortus	<1 in 25	<1 in 25

Blood Count (March 6).—Red blood cells, 5,000,000 per c.mm.; white cells, 21,600 per c.mm. *Differential count:* Polymorphonuclears, 80.5; lymphocytes, 15; eosinophils, 1; basophils, 0.5; large hyalines, 3 per cent.

Lumbar puncture was carried out on two occasions. On March 7 the total protein was 60 mg. per 100 c.cm., the chlorides 850 mg., and the sugar normal. The cells numbered 795 per c.mm.* Culture revealed no growth. On March 11 the total protein had fallen to 40 mg. and the chlorides to 790 mg. per 100 c.cm.; the sugar was normal. Cells numbered 35 per c.mm. No growth was found on culture.

Post-mortem Examination.—No evidence suggestive of enteric fever was found. The spleen was congested but not enlarged. The lower lobes of both lungs were of a dark purple colour, and on section the cut surface was deep red; blood and a few air bubbles could be expressed. Portions of the affected lobes failed to sink in water. There was no pleural effusion. The heart and kidneys appeared normal; the brain showed congestion and slight oedema.

Comments on Case S.

The result of the first Widal test gave rise to the view that the patient was possibly suffering from typhoid fever, but the absence of O antibodies, the fact that the patient had been inoculated against enteric fever, and the absence of any change in the titre of the antibodies when the Widal test was repeated a week later disposed of this view. The leucocytosis, with a relative and absolute increase of polymorphonuclears, was also against such a diagnosis. Later, when it was learned that the authorities of the Zoological Gardens suspected psittacosis infection among some of the keepers, the nature of the patient's illness became clear.

The infection of the blood stream was undoubtedly a secondary one. Whether it was of any pathological significance is difficult to say; most probably it was not. The changes in the cerebrospinal fluid are of interest because of the absence of any similar record in the literature. Polayes and Lederer (1932) state that in one of their cases the spinal fluid was under increased pressure and was opalescent owing to red blood corpuscles, but this is the only reference we have been able to find. The intense headache, often occipital, which is such a feature of psittacosis, and which may sometimes be associated with head retraction, suggests that in some cases the meninges may be involved. Whether the changes found in this case were due to the virus of psittacosis it is impossible to say, since no examination of the cerebrospinal fluid for virus was made.

Laboratory Investigations for Evidence of Psittacosis Infection. A: Human Material

The following material was sent to the laboratories of the London Hospital for investigation: *Serum* (for the complement-fixation test) from the patients, C., J.P., An., B., and S.; in addition serum from the parrot house keeper A., who had shown no illness, was included. *Sputum* from Cases C. and J. P. *Post-mortem Material:* portions of lung and spleen from Case S.

Complement-fixation Tests with Serum Samples.—These were carried out by the method, described elsewhere (Bedson, 1937), in which the antigen employed is a partially purified suspension of virus obtained from virulent mouse spleen, heated at 100° C. for thirty minutes. The results are given in Table II.

TABLE II.—*Complement-fixation Test with Sera from Outbreak*

Donor of Serum	Exposure to Infection	Day of Disease when Collected	Result of Test			
			Serum Dilution	Antigen + 2 M.H.D. Complement		
				Psittacosis	Control	Saline
A.	Members of parrot house staff who looked after the suspected birds while in the parrot house sanatorium.	Not ill	1 in 4	—	—	—
			1 in 8	—		
C.		23rd	1 in 4	++++ ++++ ++++ ++++	—	—
			1 in 8			
J. P.		23rd	1 in 4	++++ ++++ ++++ ++++	—	—
			1 in 8			
An.		17th	1 in 4	++++ ++++ ++++ ++++	—	—
			1 in 8			
B.		10th	1 in 4	++++ ++++ ++++ ++++	—	—
			1 in 8			
S.	Employed in quarantine station	P.M.(died 17th day)	1 in 4	++++ ++++ ++++ ++++	—	—
			1 in 8			
Controls: Known +			1 in 4	++++ ++++	—	—
Known −			1 in 4	—	—	—
Saline				—	—	—

These results indicated quite clearly that the four cases of illness among the parrot house staff and the fatal illness which occurred in one of the sanatorium staff were due to infection with the virus of psittacosis. Keeper A., who provided the only serum to give a negative result, had

* Mainly polymorphonuclear.

been employed on the staff of the parrot house for nearly thirty years and gave no history of having suffered from a disease like psittacosis. Whether his escape on this occasion is to be attributed to immunity as the result of prolonged employment in the parrot house it is impossible to say.

EXAMINATION OF SPUTUM FROM CASES C. AND J. P.

Smears of these two specimens were made and stained by Rivers's modification of Castañeda (Rivers and Berry, 1931) and by Giemsa. Nothing suggestive of virus was seen in these preparations. Suspensions of the sputum in M/50 phosphate buffer *p*H 7.6 were made, the concentration of sputum being approximately 1 in 10. The suspension of sputum from Case J. P. gave a copious growth of various bacteria and was filtered through a gradocol membrane of 0.5 μ A.P.D.; the other specimen contained fewer bacteria and was used unfiltered. Inoculation of mice with these suspensions resulted in the isolation of psittacosis virus from the sputum from Case C. The findings are given in detail in Table III, from which it will be seen that even in the positive case the result of primary inoculation was indefinite and that one further passage was required to establish the presence of virus.

TABLE III.—*Results of Examination of Sputum by Mouse Inoculation*

Sputum		Primary Inoculation (1 in 10 Suspension of Sputum in Phosphate)			Passage from Primary Mice		
Case	Treatment	Dose	Mouse	Result	Inoculum	Mouse	Result
C.	Nil	0.5 c.cm. i.p.	A	? ill. Killed 19th day. P.M. findings indefinite	5 per cent. suspension of spleen A. 0.5 c.cm. i.p.	C D	Ill. Killed 5th day. Virus present in peritoneal exudate and spleen
			B	Survived after indefinite illness			
J.P.	Filtered through gradocol membrane	0.5 c.cm. i.p.	A	? ill. Killed 12th day. P.M. findings indefinite	5 per cent. suspension of spleen A. 0.5 c.cm. i.p.	C D	Neither showed definite symptoms. Killed 12th day. P.M. findings negative
			B	? ill. Killed 20th day. P.M. findings indefinite	5 per cent. suspension of spleen B. 0.1 c.cm. i.p.	E F	Mice seemed ill. Killed 15th day. P.M. findings indefinite. Further passage with suspension of spleens of mice E and F gave a negative result

EXAMINATION OF POST-MORTEM MATERIAL FROM CASE S.

Porions of spleen and lung were sent for examination; these were investigated both for histological change and for the presence of virus.

Histological Examination.—"Impression" preparations were stained by the Castañeda and Giemsa methods and examined for the presence of virus; none was seen. Sections made from tissue fixed in Zenker formol were stained with haematoxylin and eosin and with toluidine-blue and eosin-orange; the latter method stains the virus of psittacosis in sections very well. The following changes were noted:

Spleen.—Extreme congestion of pulp; many haemorrhages. There was an increase in the large mononuclear phagocytes in the pulp, some of which contained red blood corpuscles or blood pigment. Although no definite areas of necrosis were seen many of the phagocytic cells of the pulp were vacuolated and some obviously degenerate. No virus was seen in any of these cells or free in the pulp sinuses; no bacteria were present.

Lung.—Two portions of lung were submitted for examination. One of these showed little change apart from some engorgement of vessels. The other, which macroscopically was dark red in colour, showed, on section, the appearances characteristic of a virus pneumonia. The alveoli contained serum, fibrin, desquamated alveolar cells, mononuclear phagocytes, and red blood corpuscles. Except for one or two small areas polymorphonuclear leucocytes were few in numbers. The make-up of the alveolar contents varied in different parts of the section. In some it consisted principally of serum, fibrin, and a few red corpuscles, whereas in others desquamation of alveolar cells and the presence of mononuclear phagocytes were an additional and prominent feature. In many instances the alveolar walls were difficult to make out, and here and there perivascular infiltration with mononuclear cells and plasma cells was noted. The bronchioles showed a similar change to that seen in the alveoli. In four mononuclear phagocytes colonies of virus were seen in sections stained with toluidine-blue and eosin-orange, and in those small areas where the polymorphonuclear leucocytes were numerous Gram-positive cocci arranged in irregular clusters were observed. Cultural examination of the lung tissue showed these to be *Staphylococcus aureus.*

Examination of Tissue by Animal Inoculation.—Portions of lung and spleen were ground up and suspended in phosphate buffer to give a 10 per cent. suspension. Since this suspension gave a copious growth of *Staph. aureus* a portion was filtered through a 0.5 μ gradocol membrane. Mice were inoculated intraperitoneally with both the filtered and the unfiltered suspension, and the presence of psittacosis virus demonstrated in this way. The details of this part of the investigation are given in Table IV.

TABLE IV.—*Investigation of Tissue from the Fatal Case, S., by Mouse Inoculation*

Primary Inoculation				Passage from Primary Mouse		
Inoculum	Dose	Mouse	Result	Inoculum	Mouse	Result
10 per cent. suspension of lung and spleen in phosphate buffer. Unfiltered	0.5 c.cm. i.p.	A	? ill 8th day. Killed. P.M. appearances indefinite. No virus seen in spleen smear	5 per cent. suspension of spleen A. 0.5 c.cm. i.p.	E F	Ill 7th day. Killed. P.M. appearances positive. Virus present in smears made from spleen and peritoneal exudate Ill 11th day. Killed. Findings as in E
		B	? ill 11th day. Killed. P.M. findings indefinite. No virus seen in spleen smears	5 per cent. suspension of spleen B. 0.5 c.cm. i.p.	G H	Remained in good health Killed 18th day. P.M. findings negative
Same suspension but filtered through 0.5 μ gradocol membrane	0.5 c.cm. i.p.	C D	Remained in good health Killed 26th day. P.M. findings negative	No passage made		

Laboratory Investigations. B: Bird Material

The following material was received for examination: (1) The organs of a macaw, one of the recently imported birds which died on March 10. (2) The body of a blue budgerigar, a recent addition to the Zoological Society's collection which was found dead on March 10. (3) The spleen and liver of a Guilding's parrot which had developed an acute enteritis ending fatally on March 14. This bird had been in the Society's collection for about four years.

A naked-eye examination of the organs was made, smears of the spleen were stained by the Castañeda method and examined microscopically for the presence of virus, and mice were inoculated intraperitoneally with suspensions made from the spleens. The findings are recorded in Table V, from which it will be seen that psittacosis virus was isolated from the macaw and the Guilding's parrot, but not from the budgerigar.

TABLE V.—*Investigation of the Tissues from Three Birds whose Deaths were Suspected of being due to Psittacosis*

Nature of Examination	Source of Material		
	Macaw	Budgerigar	Guilding's Parrot
Naked-eye appearance of organs	Liver normal. Duodenum normal. Spleen enlarged, soft, and deep purple in colour	Nothing abnormal noted	Liver shows many small irregular necrotic foci. Spleen enlarged, soft, and dark red in colour
Spleen smears (Castañeda)	No virus seen	No virus seen	Psittacosis virus present in small amount
Mouse inoculation (0·5 c.cm. of 5 per cent. spleen suspension injected i.p. into each of two mice)	Both mice very ill by 7th day. P.M. appearances typical; virus demonstrated microscopically	Mice remained well. One further passage in mice negative	7 days after inoculation one mouse was very ill and the other moribund. P.M. appearances typical; virus demonstrated microscopically

Comment

The evidence produced in this paper leaves no doubt as to either the nature of this illness among the Zoo employees or its source. The investigation of the outbreak might have been more complete had a serological survey been made of all those exposed to infection (see Table I), for it is possible that some of these individuals, although showing no clinical signs of illness, were none the less infected, and these silent infections might have revealed themselves by the development of complement-fixing antibodies. Thus we do not know the extent of the infection among the personnel at risk. There was also a history of "influenza" having developed among some of the crew of the vessel in which this consignment of parrots was brought from South America. An effort was made to trace these individuals with a view to obtaining specimens of serum from them, but they had been paid off and lost track of. It is probable, therefore, that the five human cases at the Zoo were only a portion of the actual cases for which this consignment of birds was responsible.

It should be pointed out that the regulations of the Ministry of Health relating to the importation of birds of the parrot family do not apply to birds intended for the Zoological Society's collection. According to the Ministry's regulations parrots and parrakeets can only be brought into this country under licence, and in this way the importation of these birds is controlled and supervised. Although these regulations have not abolished the risk of human cases of psittacosis developing in this country—because, of course, the home stocks of parrots and parrakeets are infected—they may have protected the country to some extent against widespread outbreaks such as we experienced in 1929–30. If, however, the full measure of benefit is to be derived from the present regulations, any consignment of parrots or parrakeets should be destroyed if, for any reason, active psittacosis infection is suspected. To transmit to the importer birds which are obviously out of condition or the survivors of a batch in which deaths have occurred is simply to court disaster. The alternative to this policy of what some people might consider ruthless slaughter would be to impose a period of quarantine on the incoming birds. Although, of course, this would not enable one to exclude the entry of healthy carriers, it would at any rate give time for a heavy infection of the birds with psittacosis virus to declare itself.

In the case of the batch of birds responsible for the human cases at the Zoological Gardens the period of quarantine imposed was much too short to be effective. Had they been kept in the sanatorium for a longer period, however, the disease would have declared itself, the birds could have been destroyed forthwith, and the spread of infection restricted. Since the occurrence of this outbreak it has been decided, after consultation between the authorities of the Zoological Society and representatives of the Ministry of Health, to impose three months' quarantine on all newly acquired parrots—that is, psittaciformes—arriving at the Zoological Gardens. The care of these birds and the investigation of any illness occurring among them will be under expert supervision. In addition rigorous sanitary measures for the collection and disposal of the birds' excreta have been adopted. It should be pointed out, however, that in all probability the principal portal of entry of psittacosis infection in man is the respiratory tract, and that attendants looking after birds suspected of being infected should be protected against this mode of infection. Such precautionary measures as the wearing of rubber gloves when feeding the birds and cleaning out their cages, and treating the cage floors and cleaning utensils with antiseptics, though very necessary, are probably the least important. In addition masks and goggles should be worn, for then only would adequate protection be given.

Summary

The history of an outbreak of psittacosis at the London Zoological Gardens is given, together with a short account of a fatal case.

The results of laboratory investigations of material from the five human cases and from infected birds are recorded.

Precautionary measures against infection by psittacosis are discussed.

We wish to express our sincere thanks to Dr. G. M. Vevers, superintendent to the Zoological Society, and to Colonel A. E. Hamerton, pathologist to the Zoological Society, for supplying us with information concerning this outbreak and for permission to incorporate it in this paper.

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J. R. Rinker (*Urol. cutan. Rev.*, 1938, **42**, 874), who records two fatal cases in men, both aged 43, illustrates the rarity of primary carcinoma of the male urethra by the fact that Goldstein and Abeshouse found only 112 cases in the literature up to 1936. The growth may originate in any portion of the urethra, but 63 per cent. are estimated to occur in the perineal portion. The fossa navicularis comes next in frequency, and only occasionally does a carcinoma arise in the cavernous urethra; 70 per cent. of the tumours are of the squamous-cell type, irrespective of the part of the urethra from which they arise. The course is slow; metastasis, which occurs late, is by the lymphatics to the regional lymphatic glands. Urethral discharge and bleeding may be present; the early symptoms may simulate stricture. There may be local pain, and painful ejaculation and priapism may occur. Treatment consists in complete or partial amputation of the penis. *X*-ray therapy, which was tried in Rinker's cases, is disappointing.

THE "MEDICAL APPENDIX" IN CHILDREN AND ADULTS*

BY

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It is well recognized that an abnormal appendix may give rise to abdominal symptoms which do not at all clearly suggest that they owe their origin to the condition of the appendix itself. Such cases may be found in both children and adults, and I am here attempting to classify them into types for their easier recognition and to discuss their diagnosis. Such syndromes as I am concerned with are often spoken of as those of "appendix dyspepsia," but some at least of the cases do not at all well simulate anything that would pass as "dyspepsia," and I have therefore used the term "medical appendix" to emphasize that it is characteristic for this type of case to come up for diagnosis to the physician rather than to the surgeon.

The appendix may produce abdominal symptoms in two ways: by being obstructed or by being inflamed. Obstruction and inflammation of the appendix are closely associated, either predisposing to the other. In both conditions pain is a prominent symptom, but it is only when the inflammatory process has reached a certain degree that localizing signs develop; then the pain shifts from the umbilical region to the right side, and guarding of the muscles, tenderness, and rigidity may become demonstrable.

In Children

In children the "medical appendix" is met with in two groups of cases:

1. *Dyspeptic Type.*—In this there is no more than abdominal pain, referred to the umbilicus, and sharp like colic in nature. It may recur at any time of the day or night, but it commonly occurs at meals. The pain is often severe while it lasts, doubling the child up, making it change colour and perhaps lie down on the floor; but it does not regularly lead to an action of the bowels, nor is it associated with diarrhoea. It usually lasts but a few minutes, after which the child will resume eating.

2. *Acidosis Type.*—In the second type in children the symptoms are more severe and the illness more definite. The pain in the centre of the abdomen is as before, but it is more severe, lasts longer, and is sooner or later followed by vomiting, which only partially relieves it. The attack may last for some hours, but is usually better after twelve hours' rest or sleep, though some discomfort may remain for twenty-four hours or more. Failing improvement the pain will shift to the right iliac fossa, and the evidence of appendicitis will become increasingly clear; but where the attack is brief and comparatively mild there is a danger of overlooking the real nature of the illness and of making a facile diagnosis of "acidosis."

DIAGNOSIS

To take together these two types of "medical appendix" in children, their diagnosis rests upon the following points:

(*a*) The earliest and most important symptom is abdominal pain in the umbilical region. This, though not necessarily long-lasting, is comparatively severe and tends to recur with or without vomiting. Much stress may be laid on this point, for the dyspepsias of childhood are not of a painful type unless the bowels are much out of order; and in a child who is comparatively well, whose motions are fairly regular and healthy, and who is not being perpetually dosed with unsuitable aperients, there is practically nothing other than an appendix which will produce recurrent unexplained attacks of abdominal pain. The fact that there is no adequate explanation of the recurrent attacks of abdominal pain is much in favour of their being due to the appendix. In the same way the appendix cases may be recognized among the various types of recurrent vomiting ("acidosis") in children. These may be due to many causes: overfeeding and a faulty diet; transient infections, particularly of the nose and throat; migraine in which headache is the first symptom preceding the onset of vomiting and pain; constipation and intestinal derangement and their treatment; and excitement and emotional fatigue in nervous children. The characteristic of the appendix group is that the pain precedes the vomiting, is severe and recurrent, and is inadequately explained on other grounds.

(*b*) An accurate clinical history is of great importance and is often by itself diagnostic. The exact march of events must be precisely determined, to bring out clearly the points already mentioned. It is by no means rare to find that the recurrent attacks date from an abdominal illness in which the possibility of appendicitis was raised and discarded.

(*c*) Examination of the abdomen in an interval between attacks is seldom of help, but during or immediately after an attack signs of tenderness in the right iliac fossa are sufficient, in a child, to show that the appendix is involved. It is of importance to palpate the abdomen with gentleness: to dig the tips of the fingers roughly down to the appendix region may give rise to any entirely false impression. A positive diagnosis may be made with confidence if palpation, properly performed, produces tenderness (sharp or bruise-like), a sensation of nausea, or pain referred to the transverse or descending colon. Tenderness elicited by rectal examination is of similar significance. It is to be noted that the difficulties in diagnosis connected with mere caecal distension in adults do not occur in children.

(*d*) In doubtful cases radiological examination of the appendix may be of great value in confirming the diagnosis (see below).

In Adults

The syndromes arising from obscure disease of the appendix in adults are better appreciated than in children, and may therefore be more briefly described.

1. *Gall-stone Type.*—A sudden and severe attack of appendicular colic may exactly resemble gall-stone colic, especially at its onset. Such a possibility must therefore be kept in mind, and particular attention should be paid to this point as the attack passes off, since it is then that there is the best chance of obtaining evidence incriminating the appendix.

2. *Peptic Ulcer Type.*—The best-recognized type of appendix dyspepsia is that which simulates clinically the syndrome of duodenal ulcer. The resemblance may be extraordinarily close. In both conditions there may be the same sharp abdominal pain, which may occur in the middle of the night as well as during the day, and is relieved by food, alkalis, or the vomiting of highly acid gastric juice. In other words, a diseased appendix can set up the same hypersecretion and pylorospasm as an ulcer. Radiologically, too, much the same picture may be seen in

* A British Medical Association lecture given before the Bath, Bristol, and Somerset Branch at Taunton on November 2, 1938.

the two groups of cases: the initial hold-up of the meal by pyloric spasm, the later rush through the imperfectly distended duodenal cap, the vigorous hyperperistalsis and rapid emptying of the stomach. Careful investigation of the history will often show that the earliest abdominal symptoms were suggestive of appendicular or colon pain, and that the pseudo-ulcer symptoms have supervened later.

3. *Appendix complicating Ulcer.*—Surgeons are well aware of the harmful effects of a chronic appendix on the clinical course of ulcer cases, and the benefit to the ulcer from the removal of the diseased appendix. A practical point arises in this connexion—namely, that an opaque meal should always include the radiological examination of the appendix, even though an ulcer has already been revealed.

4. *Colon Type.*—Some cases of spasm of the colon owe their origin to a diseased appendix. Their diagnosis is by no means easy, as it is well known that in many instances spastic colitis and caecal discomfort are to be found in those who have already submitted to appendicectomy without relief. Nevertheless their recognition is of importance, for if the appendix is gravely at fault there is little chance of a cure until it is removed, and indeed treatment of the colon by lavage may entail a risk of setting up an acute appendicitis. The diagnosis may be approached on these lines: first, by tracing in the clinical history, especially of the early stages, any possible illness which in retrospect might correspond to an attack of appendicitis; secondly, by comparing the frequency or severity of the local pain in the right iliac fossa with the more general discomfort of intestinal indigestion and colitis; and, thirdly, by radiological examination. Finally, it may be borne in mind that in this type of case the appendix shares in the disorder of the colon, and the patient is to some extent predisposed towards acute appendicitis: the supervention of this does not therefore necessarily signify that the correct diagnosis has been missed.

Radiological Examination

In doubtful cases examination by means of an opaque meal may provide valuable confirmatory evidence. The points suggesting disease of the appendix are as follows: (i) tenderness of any part of the appendix under screen control; (ii) shifting of the tender point with artificial displacement of the caecum; (iii) fixation and rigidity; (iv) acute kinking; (v) the presence of concretions; (vi) variations in calibre; (vii) crenation of the mucosa and filling defects; (viii) imperfect filling or delayed emptying; (ix) complete absence of filling, especially after preliminary purgation. This last sign is not to be taken as of significance unless it is accompanied by one or more of the other signs enumerated.

Diagnosis and Results

The diagnosis of each type of disorder due to an abnormal appendix has already been discussed. A positive diagnosis may be claimed to be correct where operation reveals a diseased appendix or leads to a prompt cessation of symptoms. It is not, however, to be expected that operation in a quiet interval will always show macroscopic evidence of disease in the appendix, nor that where spasm and colitis have been present for a long time operation will necessarily cause an immediate freedom from all symptoms. Trying to estimate results from personal experience as fairly as possible, I think that a positive diagnosis of an abnormal appendix reached on the lines indicated is very seldom wrong. The results obtained by operation lead to this conclusion, which is confirmed by the fact that of four patients who refused operation three have since suffered from acute attacks necessitating surgery. On the other hand it cannot be said that, even with the greatest care, a negative diagnosis is equally reliable, and I am aware of cases which I have passed as normal developing an acute attack within the next few months. Such errors are probably unavoidable if cases are seen only during quiescent intervals.

In children the diagnosis of a "medical appendix" is comparatively easy, and, where correctly made, operation is uniformly and completely successful in leading to a cessation of all symptoms. In them nothing could be more satisfactory. In adults the cases simulating ulcer are very successful, although they may need treatment for the duodenal irritation for some weeks after appendicectomy. In the colon group many do obtain relief at once by operation, but in others in which symptoms of colitis and intestinal indigestion have been present for a long time operation will not do more than leave the way free for appropriate medical treatment to be instituted.

I express my thanks to Sir L. Barrington-Ward and my colleagues Mr. F. W. M. Pratt and Dr. H. Courtney Gage for their kind interest in the preparation of this address.

TREATMENT OF GONORRHOEA BY ULERON

A REVIEW OF 120 MALE CASES

BY

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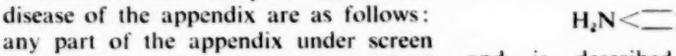
The references in the Continental and world medical literature to the use of uleron in the treatment of gonorrhoea are numerically so formidable that an adequate review of the findings recorded is almost impossible to give. The preparation, which has the structural formula



and is described chemically as 4-(4'-amino-benzol-sulphonamide)-benzol-sulphon-dimethylamide, is a colourless substance, soluble with difficulty in water, and is put up in 0.5 gramme tablets.

First reported upon by Grütz (1937), who used it and allied preparations in a group of thirty-six patients, it was later the subject of investigation by Felke (1937), Fischer (1937), and many others. During 1938 approximately 160 articles appeared describing the results of using the preparation in gonorrhoea, most of them by Continental authorities. I will choose only five of these articles, which seem to give a general picture of what our Continental colleagues have achieved.

Mergelsberg (1938a), using a maximum of three "Stosses"—that is, short courses of treatment—separated by suitable pauses, and not exceeding a total of 12 grammes per three days, found that old gonorrhoea responded best and that results were quite good in complications. His figures are of interest: sixty-nine cases of old gonorrhoea which had preliminary irrigations gave a 77 per cent. cure. W. and K. Gennerich (1938), using similar dosage and a preliminary two to three weeks' irrigation with ½ to 1 per cent. albargin, treated sixty-four cases (fifty-eight of them male), all of whom finally passed tests of cure: fifty-six of these responded to 1, six to 2, and two to 3 "Stosses." Fuhs and Volavsek (1938a), using a seven-day "Stoss," which the makers of the drug consider

inadvisable as leading to the possibility of toxic effects, obtained 90 per cent. cure in 133 men and 97.3 per cent. in thirty-six women. In later publications Mergelsberg (1938b) obtained improvement (on his original figures) to 87.5 per cent. cure in a group of patients irrigated with ¼ to ½ per cent. protargol solution four times daily whenever the first "Stoss" had failed, while Fuhs and Volavsek (1938b), still using the seven-day "Stoss," record their cures as 90 per cent. in 299 men and 94 per cent. in eighty women, his total experience of the drug amounting to 486 cases.

British literature on uleron is relatively scanty. O'Hanlon (1938) recommended its use in cases not cured by sulphanilamide. Walsh (1938) in a preliminary article described its effects, on the whole favourable, in forty-three male cases of gonorrhoea. Cokkinis and McElligott (1938) quote their experiences in 150 cases and note that the product has no immediate toxic effects. They regard its ultimate curative value, however, as inferior to that of sulphanilamide. Hanschell (1938b) refers to 200 cases treated with uleron, and believes it to be more effective and safer for male gonorrhoea than sulphanilamide (ninety-nine cases). L. W. Harrison (1938) deals with its mode of application; Cokkinis (1938) describes its successful employment in non-gonococcal urinary infections. Nicol (1938) and Prebble (1938) also mention its use.

A number of articles on the use of sulphanilamide and M & B 693 have also appeared. Short of giving a complete list of these it will suffice to mention the publications of Cokkinis and McElligott (1938), who review 633 cases treated with sulphanilamide; McGregor-Robertson (1938), who analyses 100 cases similarly treated; and Bowie (1938), who reports on M & B 693. As regards the comparative value of the three drugs—sulphanilamide, M & B 693, and uleron—there seems to be a preference in this country for the first two of these, and emphasis has been laid on the fact that toxic polyneuritis may result from uleron. My own experience with uleron in over 200 cases has not included any instances of this complication, and I cannot help feeling that the incidence of polyneuritis must fall to a very low level if the recommended dosage (such as I have used) is employed.

Clinical Material and Mode of Treatment

For the purpose of the investigation a total of over 200 cases of gonorrhoea (all males) was originally put on uleron, but for this report only 120 are included. The cases omitted were those rendered statistically valueless by reason of faulty attendance. Of the 120, 100 were acute recently infected cases and twenty were infected for a longer period before beginning uleron treatment. All of the cases were found to have gonococci in direct urethral smears on the first attendance at the clinic and on the day immediately preceding uleron treatment. Daily irrigations (posterior from the outset when possible) with 1 in 10,000 potassium permanganate solution were given in all cases. The use of the urethral syringe was not advised, as I believe this instrument to be dangerous unless employed by an experienced medical man or under medical supervision.

The uleron was administered in short three-day courses separated by varying short intervals (usually nine days). Patients were given the following printed instructions as to dosage:

> *1st Day.*—Two tablets three times after food.
> *2nd and 3rd Days.*—Two tablets four times a day after food.
>
> A full glass of water to be taken with each two tablets, and no eggs or salts (Glauber or Epsom) to be taken during the three days.

Thus twenty-two tablets (11 grammes) were given during each course.

On the days immediately preceding and following all uleron courses the clinical picture, a direct urethral smear (if obtainable), and a two-glass urine test were always recorded. No patient was dismissed as "cured" until he had passed the routine tests of cure (T.O.C.). The routine T.O.C. at this centre consists in all instances of three prostatic smears (the patient not having urinated for three hours and the glans penis having been well cleaned with surgical spirit), the passing of a metal sound into the bladder, urethroscopic examination, and a provocative gonococcal vaccine injection. A complement-fixation test for gonorrhoea is not done in all cases. The T.O.C. extends over a period of at least six weeks. A particularly long observation interval between "apparent cure" and T.O.C. was allowed for in this series.

Detailed Analysis of 100 Cases of Early Infection

All these cases were clinically and pathologically acute gonococcal urethritis on first attendance at the clinic. Seven had complications at the outset of treatment, which included peri-urethral abscess (one), epididymitis (two), copaiba rash (one), toxic conjunctivitis (one), retention of urine (one), and cystitis (one). Later, but before the first uleron course, a further twelve developed complications, as follows: epididymitis (five), peri-urethral abscess (two), cystitis (two), prostatitis with rheumatism (one), slight rheumatism (one), and arthritis of knees and ankles (one).

The average duration of urethral discharge before beginning uleron treatment was 17.9 days. The average interval between the first and second uleron courses was 9.2 days, and that between the second and third courses

TABLE I.—*Clinical Picture of 100 Cases on Completion of Uleron Treatment*

	Clinical Picture immediately following Course(s)			Clinical Picture after Period of Observation			Notes
	No Sign of Infection	Less Discharge	No Change	Relapse	Apparent Cure	Apparent Failure	
28 cases receiving one course only	18	9	1	1	26	1	The "relapse" case relapsed several weeks later and uleron was not repeated. The "apparent failure" defaulted
42 cases receiving two courses only	31	9	2	4	35	3	The four "relapses" and three "apparent failures" were not treated further with uleron
30 cases receiving three courses only	15	2	13	4	13	13	
Total of 100 cases receiving one, two, or three uleron courses	64	20	16	9	74	17	

10.8 days. Twenty-eight cases received only one uleron course, forty-two received two courses, and thirty received three courses. Table I gives the clinical picture of the 100 cases on completion of uleron treatment, and Tables II, III, and IV the clinical or pathological picture immediately following one, two, or three uleron courses.

Limitation of space unfortunately makes it impossible to give details of the protocols of each case (as has been done with the series of twenty chronic cases, which see). I have, however, a limited number of photographic copies of the details of the protocols of each acute case and will be pleased to supply one to any medical man who wishes it.

Table I shows in a graphic manner the effect of uleron in cases grouped according to whether they received one, two, or three courses of the drug. In contrast with this, Table II gives, so to speak, a cross-section of the results of treatment taken immediately after the first course of uleron and therefore including the total material of 100 cases. This point is mentioned here in order that no confusion should arise from the observation that in Table I sixty-four cases are seen to have had no sign of infection "immediately following the course(s)," while only forty-eight of 100 are shown in Table II to have had no sign of infection.

TABLE II.—*Clinical and Pathological Picture of 100 Cases immediately following One Uleron Course (including those who later received Further Uleron Treatment)*

	No Sign of Infection	Less Discharge		No Change
		G.C.−	G.C.+	
100 cases	48	24	14	14

It was not considered necessary to give further treatment to twenty-seven of the above cases after observing them for a few days. Another case defaulted while still infected, and is recorded (see Table I) as an "apparent failure."

Seventy-two patients received a second uleron course. This number comprises sixteen who relapsed after disappearance of discharge on the first course, three who relapsed after showing "less discharge," fourteen who remained free of discharge but whom it was thought advisable to treat further, twenty-six who showed "less discharge" but did not relapse, and thirteen who failed to respond to the first course.

TABLE III.—*Clinical and Pathological Picture of Seventy-two Cases immediately following Two Uleron Courses*

	No Sign of Infection	Less Discharge		No Change
		G.C.−	G.C.+	
72 cases	40	12	6	14

It was not considered necessary to give further treatment to thirty-eight (although four of these subsequently relapsed). Three were recorded as "apparent failures" to uleron after two courses.

Thirty received a third uleron course. This number comprises six who relapsed after disappearance of discharge following two courses, three who remained free from discharge but whom it was thought advisable to treat further, ten who showed less discharge after two courses, and eleven who failed to respond to two courses. That only eleven of the fourteen cases showing no improvement in the previous table were given a third course seems to require explanation. The three cases not treated further are accounted for as follows: (1) Case 68 failed completely to respond and was given other treatment; (2) Case 95 was given other treatment; (3) Case 100 developed urticaria after the second course, and further use of the drug was thought inadvisable.

TABLE IV.—*Clinical and Pathological Picture of Thirty Cases immediately following Three Uleron Courses*

	No Sign of Infection	Less Discharge		No Change
		G.C.−	G.C.+	
30 cases	15	2	0	13

The interpretation of the figures given above will be found under "Discussion and Conclusions."

Control Cases.—For the purpose of comparison 100 consecutive cured acute cases were taken from a previous year. All had received daily irrigations and had eventually completed the routine T.O.C. The average duration of discharge was fifteen weeks. Complications (mild and severe) occurred in 24 per cent. of these cases.

Detailed Analysis of Twenty Cases of Late Infection

Table V, which gives the protocols of each case, shows the type of case concerned and the results obtained. Fourteen patients had gonococcal complications before uleron treatment. All had a definite urethral discharge containing gonococci which had persisted despite irrigations for periods varying from six to eighty-eight weeks. The duration of discharge (in weeks), from the first day on which it was observed by the patient himself to the day on which the uleron was begun, is recorded in the table. As the series is not large, brief individual case records are given below.

Case B1 developed an acute unilateral epididymitis thirty-six weeks after attending the clinic. An acute urethral discharge had persisted. Uleron proved successful, the discharge clearing up in eight days. A second uleron course was given as a "follow-up." An eleven-weeks observation period was allowed before starting "tests of cure." All the T.O.C. were eventually passed successfully.

Case B2 was a severe prostatitis discharging freely. The first uleron course was given at the fifty-second week; the urethritis subsided and the prostate returned to normal. Two courses were given.

Case B3 had a persistent gonococcal urethritis due to severely infected urethral follicles. Two uleron courses produced an "apparent cure" in eleven days. A prostatitis existed at an earlier date in this case.

Case B4, with a Tyson's gland infection and a persistently discharging peri-urethral abscess, cleared up temporarily after two uleron courses, but relapsed and did not respond to two further courses. This was a definite uleron failure.

Case B5, complicated by a double epididymitis, began uleron treatment in the twenty-second week. An improvement, both in the complication and in the urethritis, was registered after the first uleron course and an "apparent cure" after the second course. The case relapsed after a provocative gonococcal vaccine injection at the beginning of the T.O.C. The value of a large provocative vaccine injection is revealed here. This case is recorded as a uleron failure.

Case B6, also with a double epididymitis, began uleron in the twelfth week of urethritis. After the first course the discharge was less and only a few gonococci were then found in the direct urethral smear. The second course was begun after an eight-day rest and no discharge resulted; a test showed clear urine (apparent cure). The case was proclaimed "cured" after a further fourteen-weeks observation period and T.O.C.

Case B7 was very similar to B6 except that the condition was better after the first course.

Case B8 developed an arthritis of the shoulder and of one finger. Uleron treatment was begun in the twelfth week. Two courses were given, an "apparent cure" being achieved after the first.

Cases B9, B10, and B11, all with no gonococcal complication, responded permanently to the first uleron course. Two

TABLE V.—*Twenty Cases of Gonococcal Urethritis in the Male Subject treated at a Late Stage with Uleron. All these Cases were on Daily Irrigations of 1 in 10,000 Potassium Permanganate from the First Attendance at the Clinic*

Patient's serial number	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
Duration (in days) of urethral discharge before attending clinic	14	2	3	14	4	4	14	7	2	2	7	7	7	6	3	4	3	14	7	7
Clinical picture (including complications) on first attending clinic	G.I.	G.I.	G.I.	G.I.	G.I.	G.I.	G.I.	G.I.	G.I.	G.I.	G.I.	G.I.	G.I.	G.I.	G.I.	G.I.	G.I.	G.I.	G.I.	G.I.
Gonococcal complications after first attendance but before 1st uleron course	Rt. epid. 36 wks. later	Prostatitis	Infected follicles and prostatitis	Tyson's abscess and periurethral abscess	Rt. epid. and lt. epid.	Lt. and rt. epid.	Lt. epid.	Arthritis shoulder and one finger	—	—	—	Generalized arthralgia & (knee) arthritis	Periurethral abscess	—	Prostatitis	—	Toxic conjunctivitis; arthralgia; prostatitis	—	Prostatitis and epid. (1 side)	Epid (both sides)
Duration of discharge (in weeks) before 1st uleron course	88	52	32	22	22	12	14	12	14	16	14	14	19	15	11	9	10	10	6	7
Clinical picture immediately before 1st uleron course	D++	D+	D++	D±	D++	D+	D+	D±	D+	D++	D+	D+	D±	D+	D±	D±	D+	D+	D+	D±
Urines 1 and 2 before 1st uleron course	Ts,Sps,H Sps	Sps, Ts Cl	Sps, Ts Cl	G.C., Sps Cl	Sps, H H	Sps, Ts Cl	Sps, H Cl	Sps, Ts Cl	Sps Cl	Sps, H Cl	Ts, Sps Cl	Sps, Ts H	Sps Cl	Sps Cl	Oc, Sps H	F. Ts, H Cl	Sps, Ts Sps	Sps Sps	Sps Sps	Sps Cl
Clinical picture immediately after 1st uleron course	D++	D−	D±	D±	D±	D±	D−	D−	D−	D−	D−	D+	D−	D±	D±	D−	D±	D±	D±	D±
Urines 1 and 2 after 1st uleron course	Ts,Sps,H Sps	Cl Cl	Sps, Ts Cl	Oc Sps Cl	Oc Sps Cl	Sps Cl	Cl Cl	Cl Cl	Cl Cl	Cl Cl	Cl Cl	Cl Cl	Oc Sps Cl	Sps Sps	Oc Sps Cl	F.Sps Cl	Sps Sps	Sps Sps	Sps Cl	Sps Cl
Direct urethral smear (if obtainable) on day following cessation of 1st uleron course	PCs+ G.C.+ Os+	Nil	PCs± G.C.− Os−	PCs+ G.C.− Os−	PCs+ G.C.− Os−	PCs+ G.C.± Os−	Nil	Nil	Nil	Nil	Nil	PCs+ G.C.+ Os−	Nil	PCs+ G.C.+ Os±	PCs± G.C.− Os−	Nil	PCs+ G.C.± Os−	PCs+ G.C.− Os+	PCs+ G.C.± Os−	PCs+ G.C.− Os−
Gonococcal or uleron complications following 1st uleron course. Any other notes	Discharge cleared																			
Interval (in days) between 1st and 2nd courses	5	5	5	5	8	8	11	8	11	—	7	7	16	8	15	13	14	7	7	12
Clinical picture immediately before 2nd uleron course	D−	D−	D−	D−	D±	D±	D±	D−	D±		D−	D+	D±	D±	D±	D+	D±	D±	D±	D±
Urines 1 and 2 before 2nd uleron course	F. Sps Cl	Oc Sps Cl	Cl Cl	Oc Sps Cl	Oc Sps Cl	Sps Cl	Oc Sps Cl	Cl Cl	Oc Sps Cl		Cl Cl	Sps, Ts H	F. Sps Cl	Oc Sps Cl	Cl Cl	F. Sps Cl	Sps, Ts Sps	Sps Cl	Sps Cl	Sps Cl
Clinical picture immediately after 2nd uleron course	D−	D−	D−	D−	D−	D−	D−	D−	D−		D−	D+	D−	D−	D−	D±	D±	D±	D−	D±
Urines 1 and 2 after 2nd uleron course	F. Ts Cl	Oc Sps Cl	Cl Cl	F. Ts Cl	Cl Cl	Cl Cl	Cl Cl	Cl Cl	Cl Cl		Cl Cl	Sps Cl	Cl Cl	Cl Cl	Cl Cl	Oc Sps Cl	Sps Oc Sps	Sps Oc Sps	Sps Cl	Sps Cl
Direct urethral smear (if obtainable) on day following cessation of 2nd uleron course	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil		Nil	PCs+ G.C.+ Os−	Nil	Nil	Nil	PCs± G.C.−	PCs+ G.C.± Os−	PCs+ G.C.− Os−	Nil	PCs+ G.C.+ Os−
Gonococcal or uleron complications following 2nd uleron course: Any other notes				Repeated attacks of slight discharge. Seen again								Knee (arthritis still severe)				Discharge ceased				
Interval (in days) between 2nd and 3rd courses				90								9					7	8		8
Clinical picture immediately before 3rd uleron course				D−								D+					D±	D±		D±
Urines 1 and 2 before 3rd uleron course				F.Ts Cl								Sps, Ts Cl					Sps Oc Sps	Sps Cl		Sps Cl
Clinical picture immediately after 3rd uleron course				D±								D±					D±	D−		D±
Urines 1 and 2 after 3rd uleron course				F. Ts, Sps Cl								Sps, Ts Cl					Sps Cl	Cl Cl		Sps Cl
Direct urethral smear (if obtainable) on day following cessation of 3rd uleron course				PCs+ G.C.+ Os−								PCs+ G.C.− Os					PCs+ G.C.± Os	Nil		PCs+ G.C.± Os−
Gonococcal or uleron complications following 3rd uleron course. Any other notes				A 4th uleron course given								No response to uleron					Discharge ceased later			Discharge became profuse
Time in weeks from onset of discharge to beginning of "Tests of cure" (T.O.C.)	100	60	40	Still on treatment	30 (Relapsed)	24	22	20	18	15	17	Still on treatment	25	22	20	16	15 (on tests)	16 (on tests)	17	Still on treatment
Time in weeks from onset of discharge to dismissal as "cured"	108	68	48			31	30	28	26	22	22		35	18	Default	20			22	
Any special notes				Uleron failure	Uleron failure							Uleron failure					Uleron failure			Uleron failure

G.I.=acute gonorrhoea. D++=urethral discharge profuse. D+=urethral discharge moderate. D±=urethral discharge slight. D−=urethral discharge nil. Ts=urine threads. Sps=urine specks. Cl=urine clear. H=urine hazy. Oc=occasional (for example, Oc Ts=Occasional urine threads). PCs=pus cells. G.C.=gonococci. Os=organisms (not G.C.). ++=very many. +=many. ±=few. −=none.

courses were given to B9 and B11 and one only to B10. Case B9 developed a slight discharge between the first and second courses.

Case B12 was a uleron failure, the drug having practically no effect on the clinical picture. This case had a generalized arthralgia and arthritis of one knee. Reference to Table V will show more details regarding this patient.

Case B13, with a slight gonococcal discharge and complicated by a peri-urethral abscess, did remarkably well but required a second course.

Cases B14 and B15 (B15 complicated by prostatitis), both persistent gonococcal urethritis cases, showed a clinical improvement at the end of the first course and an "apparent cure" at the end of the second.

Case B16 did not cease discharging immediately after the two uleron courses, but took a few days longer (three days after the cessation of the second course).

Case B17, showing toxic conjunctivitis, arthralgia, prostatitis, and gonococcal urethritis, did not respond well to three uleron courses (a uleron failure). This case later cleared up on other treatment and is now on T.O.C.

Case B18 required three uleron courses before an "apparent cure." Originally the urethral discharge contained diphtheroids and staphylococci in addition to gonococci.

Case B19 (prostatitis and unilateral epididymitis) showed only a slight improvement after one uleron course, but cleared up after the second, an "apparent cure" being noted nineteen days from beginning uleron.

Case B20 was a uleron failure. Before starting uleron a double epididymitis existed. The urethral discharge was slight. Gonococci were still demonstrable after three courses; indeed, after three courses the discharge became profuse. This patient is still on other anti-gonorrhoeal treatment (non-chemotherapeutic). This is the fifth uleron failure of this series of twenty cases.

Discussion and Conclusions

RESULTS IN ACUTE CASES

The analysis of 100 "early" cases leaves little doubt as to the value of uleron as a chemotherapeutic agent for acute gonorrhoea. It will have been observed that an interval was allowed before starting the first course and that irrigations were given in all cases. A number of acute cases were put on uleron at first attendance, but eventually I gave up this procedure as the results were less reassuring than those in this series. The belief expressed by Harrison, and some German authors, that a period should be allowed for the development of a natural resistance, was followed. The average duration of the urethral discharge before starting uleron treatment was, as already stated, almost three weeks (17.9 days). A preliminary investigation of cases treated by uleron alone (no irrigations) led me to think that for this series I should get better results by using irrigations from the first day of attendance at the clinic. Particular attention has been paid to the importance of a long observation period between "apparent cure" and application of the routine T.O.C. The T.O.C. must be as thorough for cases treated by chemotherapeutic methods as for cases treated by older methods.

The results obtained by uleron treatment in this series, although not 100 per cent., give good reason to believe that the drug has opened up a new era in the treatment of gonorrhoea. After one uleron course no fewer than 26 per cent. of the acute cases showed an "apparent cure" and were proved to be definitely "cured" at a later date. After two courses a further 35 per cent. gave a similar result, thus bringing the total up to 61 per cent. After three courses another 13 per cent. was added to the "apparent cures" (followed by successful T.O.C.), the total now reaching 74 per cent. One must admit that relapses do occur after uleron treatment and also that some cases do not seem to respond to the drug at all. After one, two, or three uleron courses the relapses totalled 9 per cent. and the failures 17 per cent. One of the "relapses" appeared clinically free from gonorrhoea for a period of seven weeks before relapsing. I believe that there was no question in this case of re-exposure to infection.

Gonococcal complications before and after uleron treatment totalled 19 per cent. in this series, and in the control cases this was 24 per cent. The average duration of discharge (including the period before attending the clinic) for the "apparent uleron cures" was thirty-five days, in contrast to fifteen weeks in the control cases.

RESULTS IN CHRONIC CASES

Although it would not, in such a small series as twenty cases, be justifiable to give these results as percentages, one should be safe in concluding that uleron has an important place as a chemotherapeutic agent for such cases. All of the patients had had persistent discharge despite irrigations, and complications which had proved particularly resistant to routine treatment. As regards the actual results, Case B10, of sixteen weeks' duration, showed an "apparent cure" after one course. Twelve cases received two courses and were then "apparent uleron cures." Two (B16 and B18) responded more slowly, and five (B4, B5, B12, B17, and B20) were uleron failures. In this group, as with the series of 100 acute cases, one realizes that some gonococcal infections do not respond to uleron treatment in the least.

GENERAL POINTS

Complications due to uleron were few. Three patients complained of slight headaches during the uleron course, four of a slight nausea, and two developed a severe generalized urticaria (one after the second course and one after the third course). The generalized urticaria cleared up rapidly when the drug was stopped. Neither polyneuritis nor acute anaemia occurred in this series. My experience of sulphanilamide is limited to some fifty cases only, and the results were inferior to those from uleron. This does not agree with the findings of such authorities as Cokkinis and McElligott, but possibly I have been rather prejudiced against sulphanilamide, as I have found that large doses over a considerable period were necessary, which increased the possibility of drug reactions.

Uleron does not protect the patient against a fresh attack of gonorrhoea. Two cases in the first group were re-exposed to infection and the disease was just as acute as before. Both had been definitely cured and had passed tests, and there was thus no question of their being "relapses."

Finally, a word of warning is necessary against the indiscriminate and uncontrolled use of a drug such as uleron. If allowed to get into the hands of the patient who wishes to treat himself the results might be more disastrous than the disease itself.

Summary

1. Numerous references to the treatment of gonorrhoea by uleron have recently appeared in the medical literature; some of these are quoted. I wished to form an unbiased opinion of uleron and to add my findings to the British medical literature.

2. The drug has been used in two groups of patients: (*a*) 100 cases of gonorrhoea treated at an early stage of

G.I. = acute gonorrhoea. D++ = urethral discharge profuse. D+ = urethral discharge moderate. D± = urethral discharge slight. D− = urethral discharge nil. Ts = urine threads. Sps = urine specks. Cl = urine clear. H = urine hazy. Oc = occasional (for example, Oc Ts = Occasional urine threads). PCs = pus cells. G.C. = gonococci. Os = organisms (not G.C.). ++ = very many. + = many. ± = few. − = none.

infection, and (*b*) twenty cases, resistant to the older methods of treatment, receiving uleron at a late stage of infection.

3. The first group, after a period of observation including test of cure, gave 74 per cent. cures, 17 per cent. failures, and 9 per cent. relapses. The second group gave five "failures" out of the twenty cases.

4. With the dosage used in this series (11 grammes per three-day course) no alarming drug reactions were observed. Three complained of slight headache, four of slight nausea, and two developed a generalized urticaria, which cleared up in about a week on cessation of the drug. No polyneuritis was encountered.

I have pleasure in expressing my thanks to Mr. A. E. Robertson, a member of my staff, for the valuable assistance rendered in the investigation of my cases.

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TREATMENT OF STERILITY

REPORT ON SIXTY-TWO CASES

BY

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This investigation has been undertaken because on reviewing a series of forty-one cases which had been admitted to the gynaecological wards of the Royal Free Hospital for the treatment of sterility in 1936 it was found, on inquiry one year to eighteen months later, that only five (12 per cent.) had become pregnant. A dilatation, insufflation, and curettage was performed in each case, seventeen receiving in addition injections of hormones.

It was felt that these figures did not justify treatment in the wards and that perhaps similar results might be obtained if sterility cases were investigated and treated in the out-patient department. Between August 1, 1937, and May 31, 1938, sixty-two consecutive women who attended Miss Dearnley's out-patient department for sterility have been investigated and treated; forty-seven complained of absolute sterility, nine of one-child sterility, one that she could not become pregnant with a second husband (although she had had four children by the first husband, and the present husband had healthy spermatozoa as demonstrated by the seminal test), and five that they had had one or more miscarriages.

Routine Investigation of Sterility

A careful history was taken, and the duration of the marriage, the use or not of contraceptives, and any menstrual abnormality were noted. A routine Wassermann test was made, being found negative in every instance. Nothing abnormal was detected on pelvic examination except retroversion in three cases, a unilateral hydrosalpinx in one case, and an undersized uterus in four cases. In each case the husband was asked to send a specimen of semen for examination, and thirty-nine of the sixty-two consented to this. Five (13 per cent.) showed no spermatozoa, and three (8 per cent.) very few and distorted specimens. Thus in 21 per cent. of the examined cases the husband was sterile. On account of the long distances many of the specimens had to be sent for examination no regard was paid to absence of motility provided the specimen was in all respects normal.

Uterosalpingography

Partly as a means of diagnosis regarding patency of the Fallopian tubes, and partly as a therapeutic agent, lipiodol was injected into the uterus. It was thought that this procedure might separate fine adhesions in a non-patent tube and that in view of the possible antiseptic action of the oil the endometrium would be left in a healthier state. No anaesthetic was given. The week following the end of the period was in most cases the time chosen to perform the test.

Technique

The patient was asked to lie in the dorsal position with the knees bent on a sterile towel on the *x*-ray table; a sterile bivalved speculum was then passed and the cervix painted with iodine. A uterine sound was employed to ascertain the direction of the uterine cavity; the two smallest-sized dilators were passed, so as to stretch the internal os gently if this was found tightly closed; and finally the insufflator (a modification of Provis's model with an oval plug, made for me by Messrs. Hawkins) was introduced. No vulsellum was used, but with the plug firmly pressed against the cervix 10 c.cm. of lipiodol was slowly injected and a radiograph taken.

It has been found that, provided the insufflator can be introduced past the internal os and the cervix is not unduly patulous, the lipiodol enters the fundus and passes into the tubes. Pain may be felt similar to that experienced during a retrograde pyelography, but not uncommonly there is no discomfort at all. In one case only of this series has there been any infection. This patient had a low temperature for a few days, and according to her private doctor she felt some pain, and there was tenderness in the pelvis on vaginal examination. Most of the patients attended twenty-four hours later for a second radiograph in order to demonstrate whether lipiodol had escaped through the Fallopian tubes into the pelvis. In twelve cases (19 per cent.) no lipiodol had entered the peritoneal cavity, suggesting absence of patency, and in two others it was doubtful whether there was a trace after twenty-four hours, but in both of these doubtful cases pregnancy occurred.

Since it is perhaps not generally agreed that one negative insufflation or lipiodol test should be accepted as conclusive evidence of occlusion of the Fallopian tube, the twelve negative cases (Table I) will be considered in further detail. In no instance where non-patency was demonstrated radiographically has the patient become pregnant. In one case the findings were confirmed at operation, and three cases were negative also to insufflation, but one of these, judging from the kymograph tracing, was rendered patent on one side by this procedure. Of the remainder, in two cases *x*-ray examination showed a unilateral hydrosalpinx, and in three there is a trace of lipiodol in one tube only; one of the latter had had a salpingectomy for tuberculous salpingitis two years

ago. Extensive destruction of the right hip-joint, the sequel to an acute arthritis, was depicted radiographically in another. Clinically, of the remaining two, one had a small acutely retroverted uterus and the other appeared normal, so that in this series the radiograph probably revealed the true state of affairs.

It is interesting to note that, although in twelve cases there was absence of patency and in nine others failure of lipiodol to enter one tube, in only two was there a history of previous inflammation with removal of a tube, and one other case had a history of removal of an ovarian cyst on the side with non-visualization of the tube. It is clear, therefore, that factors causing tubal occlusion

TABLE I.—*Record of Findings in 12 Patients with Non-patent Fallopian Tubes*

Name	Age	Parity	Lipiodol in Uterus only	Lipiodol in Tubes	Insufflation	Remarks
B. J.	31	0	+		−	
E. S.	34	1	+			Small retroverted uterus
L. A.	22	0	+			Confirmed at operation: plastic reconstruction operation performed. Right now patent
M. W.	25	0	+		−	Small acutely anteverted uterus
M. T.	39	1	+			Radiographs show extensive destruction of right hip-joint
E. S.	39	0		L. + ; R. +		None in pelvis
M. G.	38	0		L. + ; R. −		Left hydrosalpinx
K. F.	31	0		R. + ; L. −		Right hydrosalpinx
R. W.	32	1		L. trace ; R. −		
F. E.	37	0		R. trace ; L. −		
E. G.	32	0		R. ½ ; L. −		Left salpingectomy for tuberculosis two years ago
E. E.	31	0		R. + ; L. +	− +	Bilateral hydrosalpinx. Insufflated since lipiodol test, sudden pain experienced at pressure of 140 mm. Hg. and air heard to escape on right side

can operate apart from symptoms. Two radiographs showed some free fluid in the peritoneal cavity, as evidenced by the lipiodol collecting in the form of globules.

A follow-up *x*-ray examination has recently been made of five of the early cases: four were chosen in which the films showed a large quantity of lipiodol in the pelvis, and one in which there was a bilateral hydrosalpinx. In two no trace of residual opaque material was found, in two others there were traces in the pelvis and possibly a trace in one tube, and in the hydrosalpinx case traces were still present in both tubes. In no instance was there any evidence of residual lipiodol under the diaphragm or any symptoms referable to the presence of this substance in the body. In no case in this series did the radiograph show that lipiodol had entered the pelvic veins (Kilroe and Hellman, 1933; Coventry, 1934; Pujol y Brull, Vanrell, and Riera, 1929).

Hormonal Therapy

It was originally intended to give a course of injections of dimenformon (progynon-B oleosum) twice a week in the two weeks following the cessation of the menstrual period, over a period of three months, but either because of the inability of the patient to attend so often or on account of the cost of the injections, only twenty-two received this treatment, and in many instances the course was incomplete. Of this number, nine (41 per cent.) became pregnant (Table II). Six women were given a large dose (50,000 I.B.U.) in the form of dimenformon on the twelfth day of the menstrual cycle, as this "hormonal shock" therapy is thought to ensure ovulation (Clauberg, 1935), and in four instances pregnancy followed. Two women with a history of short menstrual periods and scanty loss were given injections of dimenformon twice weekly—in the one case 10,000 I.B.U. for four weeks, and in the other 50,000 I.B.U. for three weeks. Both women became pregnant.

TABLE II.—*Record of Women Pregnant Following Lipiodol Injection plus Administration of Endocrines*

Case No.	Name	Age	Number of Children or Miscarriages	Years Married or since Last Child	Years Contraceptives used	Report on Husband's Semen	Patency of Tubes		Months elapsed before Pregnancy	Miscarried (Number of Months Pregnant)	Remarks
1	S. L.	22	0	9	0		+	7 spaced injections of 10,000 I.B.U. progynon over 2 mths.	3½	2	
2	L. T.	27	0	2½	0	+	+	8 twice-weekly injections of 20,000 I.B.U. dimenformon	6		Small anteverted uterus and scanty menstrual loss
3	A. Y.	37	0	7	0		?	6 twice-weekly injections of 50,000 I.B.U. dimenformon	3		Small anteverted uterus and scanty menstrual loss
4	K. R.	31	0	5	0	+	+R.	8 spaced injections of 10,000 I.B.U. of progynon over 2 mths.	2	2	Periods irregular lately
5	E. L.	36	0	11	0	+	+	Hormonal shock therapy twice; 50,000 I.B.U. dimenformon	3		See text. Pregnancy followed second injection
6	V. S.	31	0	5	0	+	+	Hormonal shock therapy once; 50,000 I.B.U. dimenformon	1		
7	E. W.	37	0	8	0	+	+	2 injections of 10,000 I.B.U. progynon	5	1½	Intolerance to injections. Low sugar tolerance. Given spaced carbohydrate diet
8	F. C.	28	1 mis.	3½	0	+	+L.	8 spaced injections of 10,000 I.B.U. progynon + hormonal shock therapy twice	2½		Pregnancy followed second "hormonal shock" injection
9	D. B.	28	1 mis.	1¾	0	+	+R.	Hormonal shock once. Not followed by pregnancy. Corpus luteum gr. x t.d.s. before the missed period	2		

Additional Investigations

In selected cases the basal metabolic rate was estimated, and to two women in whom it was found to be low 1 grain of thyroid extract was given orally twice daily. Three women in whom the uterus was found to be small were given ½ grain of thyroid extract and 1 grain of pituitary extract (whole gland) orally in addition to hormonal injections, when after two months they had failed to conceive. Two of these patients became pregnant.

When there was a history of miscarriages the patient was sent to the biochemical department and a glucose-tolerance test was made; if a lowered sugar tolerance was found, the carbohydrate intake was regulated and spaced. One patient who had been on a diet for only five weeks miscarried. A second who miscarried was found to have a lowered sugar tolerance. It is known that diabetic women become pregnant only with difficulty, unless under treatment, and readily miscarry. Minor degrees of deranged carbohydrate metabolism may therefore be operative in some of these patients (Williams, 1933).

Advice was given as to the most opportune time for intercourse: if the menstrual cycle was normal the twelfth to the seventeenth day, reckoned from the first day of the last menstrual period, was advocated, though individual cases in my series have shown that conception can occur just before a period. (One patient was injected with lipiodol seven days before the period, had intercourse two days later, and failed to menstruate; she was subsequently found to be pregnant.) In those cases in which the patient gave a history of an excessive mucoid discharge she was advised to syringe with a solution of bicarbonate of soda, one drachm to the pint, in the early evening. Four patients who did not become pregnant within the first two or three months were given vitamin E in the form of one capsule of wheat-germ concentrate three times daily. Three subsequently became pregnant, two of them miscarrying.

Results

Between August 1, 1937, and May 31, 1938, sixty-two patients were treated, and were injected with lipiodol. Up to the time of writing (September, 1938) twenty-two patients have become pregnant—that is, 35.5 per cent. of the whole series, or 47.8 per cent. of those in whom pregnancy was possible, since sixteen patients either had non-patent Fallopian tubes or their husbands were known to be sterile. Of the twenty-two who became pregnant seven miscarried, but two are now pregnant again. (Cases where menstruation was delayed for four weeks or more in a patient previously regular and followed by a heavy loss were accepted as miscarriages.) Of the remaining twenty-four cases in which the patient has not yet become pregnant (and in the later ones of the series only three months have elapsed) we can assume that in 21 per cent. the husband is sterile, judging from the result of the thirty-nine whose semen was examined; but we are still left with a number of women in whom so far pregnancy has not occurred though all investigations on both sides have been favourable.

Discussion

Lipiodol *per se* has a therapeutic value in that it opens up the Fallopian tubes. It would seem to be of greater use than air insufflation, because the latter ceases to distend as soon as the pressure is reduced. Lipiodol, being a heavy oil, does not immediately drain back through the uterus if the tubes are occluded, but continues to exert a small degree of hydrostatic pressure that may be sufficient to open up an otherwise non-patent tube; for a uterosalpingograph taken a minute after injection may reveal lipiodol to the end of the tube only, whereas a picture taken twenty-four hours later shows traces in the peritoneal cavity. The results obtained, however, cannot be attributed entirely to the action of lipiodol, for Béclère and François (1937) quote only 18 per cent. of pregnancies out of a series of sixty cases with unilateral or bilateral patency, and Volk (1936) 25 per cent. out of a series of 110 cases. These latter figures do not differ to any extent from the results obtained by air insufflation, for 24.57 per cent. of the 1,620 cases quoted by Rubin (1932) in which some degree of patency was observed became gravid, as did 18.42 per cent. of thirty-eight quoted by Bonnet (1936).

In my series forty patients injected with lipiodol received no hormonal therapy, and thirteen became pregnant (Table III). There was tubal occlusion or sterility of the

TABLE III.—*Record of Women Pregnant Following Lipiodol Injection Alone*

Case No.	Name	Age	Number of Children or Miscarriages	Years Married or since Last Child	Years Contraceptives used	Report on Husband's Semen	Patency of Tubes	Months elapsed before Pregnant	Miscarried (Number of Months Pregnant)	Remarks
1	K. E.	26	1	3	0		+	Stat.		
2	L. H.	25	1*; 1 mis.*	3	0		+	Stat.		*By previous husband
3	M. H.	31	0	7½	0	+	+L.	Stat.		
4	I. H.	26	2 mis.	4	0		+	7		
5	V. W.	22	0	5	0	+	+	3		
6	J. G.	30	0	3	2	+	+L.	Stat.		Right hydrosalpinx
7	B. C.	26	0	2½	0	+	+	Stat.	3	
8	E. H.	28	0	5½	0	+	+	1	2	Low sugar tolerance found
9	M. P.	27	0	4	1	+	+	1		
10	M. K.	28	0	4½	3½	+	+	2		
11	M. M.	25	0	2	0	+	+	4	1½	Now pregnant again. Taking thyroid extract and pituitary whole gland
12	B. G.	31	0	6	0	+	+	Stat.	1½	Now pregnant again. Obese; dieted, taking thyroid extract
13	E. B.	35	0	4	0	+	+	2		

husband in fourteen of these forty cases, so that 50 per cent. success can be attributed to lipiodol injection alone. It is known that the failure of many patients to conceive is due to failure of ovulation, and it is claimed that ovulation is more likely to occur after suitable administration of hormones. Dihydroxyoestrin benzoate, in the form of either progynon-B oleosum or dimenformon, given in two weekly doses of 20,000 I.B.U. in the two weeks directly following the menstrual period, or as a larger dose of 50,000 I.B.U. about the twelfth day of the menstrual cycle, appears to have had some value. In cases where the uterus is undersized, nidation of the fertilized ovum is more likely to occur if further development is brought about by more regular and prolonged hormonal therapy. Failure of the fertilized ovum to embed is one of the causes of sterility, the fault either lying in the ovum itself, owing to some intrinsic deficiency (maternal or paternal), or being due to failure of the uterus to undergo the modifications necessary for embedding of the ovum, because of insufficiency of corpus luteum hormone. Further investigation on the pregnanediol (excretion product derived from the corpus luteum) content in the urine at the time of ovulation in sterile patients is being undertaken.

Insufficiency of this latter hormone, again, may be dependent on an insufficiency or an unbalanced output of anterior pituitary hormones. As Davis and Koff (1938) have recently indicated, there are probably two factors in the anterior pituitary gland responsible (*a*) for follicle ripening and (*b*) for luteinizing; and sterility may depend on an incorrect balance between these two. It is hoped that in time one may be able to isolate the hormones from

the gonadotropic substance present in the urine of pregnant women and inject them into sterile women. Thyroidal insufficiency (in both parties) may account for sterility, since Lawrence and Rowe (1928) have shown that 39 per cent. of a series of patients with some degree of thyroid insufficiency were sterile. The results of this series show that investigation and treatment of as many as possible of the existing causes of sterility, at the same time, raise the fertility level and render pregnancy more likely to occur.

Summary

1. Sixty-two women complaining of sterility have been examined, the patency or non-patency of the Fallopian tubes being confirmed by uterosalpingography, and hormone therapy has been administered in many cases.

2. Of the husbands examined 13 per cent. were absolutely sterile, and in 8 per cent. few and distorted spermatozoa only were observed.

3. In 17.7 per cent. of women examined no lipiodol entered the peritoneum, showing non-patency of the tubes, and in 19 per cent. of the remaining cases one tube only was patent.

4. Of the women who had been sterile from two to eleven years (with the exception of two cases of nine months and one year respectively) 47.8 per cent. have to date (September, 1938) become pregnant within a period varying from one to seven months after treatment was begun. (In all these cases the tubes were patent and the husbands fertile.) Of the whole series 35.5 per cent. became pregnant.

5. The average age of the patients in this series is 30 years.

6. The average number of years of sterility is 5.7.

I am greatly indebted to Miss Dearnley, who has allowed me to carry on these investigations in her out-patient department at the Royal Free Hospital. I am also indebted to Dr. Ulysses Williams for the interesting series of radiographs, to Dr. Pillman Williams for so kindly carrying out basal metabolism and sugar tolerance investigations, and to Dr. Rawlinson, director of the Institute of Public Health and Hygiene, for his careful examination and report on the semen specimens.

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1. Snapper and P. Formigne (*Nederl. Tijdschr. Geneesk.*, 1938, **82**, 1937) review the literature and record three cases in adults of the coexistence of aneurysm of the cerebral arteries and congenital cystic kidney. The first case was one of a polycystic kidney associated with a calcified renal cyst, the second showed a solitary renal cyst, and the third a polycystic kidney with multiple small cysts in the liver. The first patient recovered and the other two died. In the patient who recovered neurological examination suggested the presence of a subarachnoid haemorrhage, and radiographs showed the polycystic kidney with a calcified cyst. In the second case necropsy showed a ruptured aneurysm of the right internal carotid at its junction with the middle cerebral artery, and in the third case a ruptured aneurysm of the middle cerebral artery with subarachnoid haemorrhage was found.

AURICULAR FIBRILLATION AND THE THYROID

BY

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Thyrotoxicosis is the fourth commonest cause of auricular fibrillation, rheumatic heart disease occupying first place and myocardial degeneration and hyperpiesia the second and third. In the thyrotoxic cases, however, it is almost invariably possible to restore the patient to normal rhythm and to prevent relapse, whereas in the other types the prognosis is less favourable. The correct diagnosis and treatment of thyrotoxic fibrillation are therefore of great importance. Without adequate treatment invalidism, gross cardiac failure, and death will follow, all of which are preventable by prompt and proper treatment. In this connexion it is important to remember that thyrotoxicosis is not always as easy to diagnose as might at first sight appear. Clinically the cases can be conveniently divided into two types, which are termed primary and secondary.

In the primary type the goitre and the toxic symptoms appear at or about the same time. The whole epithelium of a previously normal thyroid is able to respond to the stimulus producing the thyrotoxicosis, and the resultant symptom-complex, usually termed exophthalmic goitre, is typical and usually readily recognized. The patients are in the main young adults and their hearts can stand the strain of continued tachycardia for a long time without developing arrhythmia, so that auricular fibrillation, while it occurs, only does so late in the disease. In secondary thyrotoxicosis, on the other hand, a goitre, usually of the nodular colloid type, has been present for a number of years before the onset of toxic symptoms. Only part of the epithelium of the gland can respond to the exciting stimulus, and the resultant symptoms are less marked and in part different. The patient, however, is older than in the primary case, and the heart is less able to withstand a prolonged tachycardia. It is in this secondary group that the greater number of cases of auricular fibrillation are met with whose thyrotoxic origin has not been diagnosed.

Diagnosis

If the patient is recognized as suffering from thyrotoxicosis and is noted to have arrhythmia it is nearly certain to be auricular fibrillation. In a rapidly beating heart extrasystoles are sometimes indistinguishable without an electrocardiogram, and such occasional extrasystoles are commonly found in thyrotoxicosis. On the other hand it is the case with very frequent extrasystoles that is most liable to be mistaken for fibrillation, and, as Campbell (1935) has pointed out, this is not a common condition in thyrotoxicosis. If, therefore, there is an established arrhythmia in a patient known to be thyrotoxic it can safely be assumed to be fibrillation, although this should, of course, be confirmed by an electrocardiogram. Paroxysmal auricular fibrillation, again, is not uncommon in hyperthyroid cases, and, although it may exist for some time, generally progresses to a state of established fibrillation if untreated.

Careful inquiry must be made into the history of attacks of arrhythmia. These are generally recognized by the patient. Both the frequency and the duration of attacks vary in different patients, but are usually fairly constant in the individual, especially as to duration; the patient being aware of when the attack starts and of

when normal rhythm is re-established. It is, however, in the patient in whom the presenting symptom is the cardiac arrhythmia that mistakes in diagnosis most often occur. Three possible sets of circumstances may be present in such a case. First, both the patient and her medical adviser may be aware that she has suffered from thyrotoxicosis. This may, however, have appeared to settle down, and she may have had a period in which her thyrotoxic symptoms have caused very little disability. The onset of arrhythmia in such a case is often thought to be an independent condition, and is treated as such, without material benefit and without the realization of the urgent need for thyroidectomy. It cannot therefore be too clearly stated that the severity of the general symptoms of thyrotoxicosis bears no relation to the onset or continuance of auricular fibrillation, and the assumption that a hyperthyroid state is too mild or has recovered too well to be responsible for the arrhythmia is a false one, and one which has deprived many patients of relief.

The second type of fallacy which may occur is where both the patient and her doctor are aware that she has had a nodular goitre, without symptoms, for many years. It is a familiar thing to which neither of them any longer pays attention. Tachycardia, followed by paroxysmal and later by established fibrillation, may be the first and almost the only evidence of the onset of secondary thyrotoxicosis. In such a case, again, it not infrequently happens that the aetiological importance of the goitre is not appreciated and the patient is treated along purely cardiac lines, and naturally without permanent benefit.

The third situation is one in which the patient is quite unaware of anything the matter with the thyroid at all, and in which her adviser either omits to examine the thyroid or, if he does, fails to detect any enlargement. Enlargement of the thyroid up to three or four times its normal size can exist in the neck without detection, and a small nodular goitre is easily missed, particularly if it is substernal in position. In such a patient the symptoms of thyrotoxicosis, other than the cardiac, may be but slight, and unfortunately many such cases pass on, unrecognized, to gross cardiac failure and death. It should be stressed, therefore, that no case of auricular fibrillation, especially in a patient over 40, should be considered as non-thyroid in origin until it has been proved to be so.

It occasionally happens that a patient is operated on for thyrotoxicosis who has never shown auricular fibrillation but develops it during the actual operation, immediately afterwards, or after an interval of two to three days. In my experience such cases invariably resume normal rhythm when the post-operative reaction has subsided, without further treatment, and I do not consider it a danger to the safe completion of the operation.

Treatment

The coexistence of auricular fibrillation with thyrotoxicosis is an urgent indication for operation. Without it normal rhythm can but seldom be restored, and, if restored, cannot be maintained. *X*-ray treatment, whatever view one may hold about its place in the treatment of uncomplicated thyrotoxicosis, is inadequate in the presence of fibrillation, and medical treatment is solely of value as a preparation for operation. The risk attaching to thyroidectomy in the hands of an experienced thyroid surgeon when fibrillation is present, while greater than in the uncomplicated cases, is remarkably little increased, remaining in most clinics in the region of 2 to 3 per cent. This has to be contrasted with the grave outlook which confronts the patient who is allowed to continue with fibrillation unoperated on. It is unfortunate that many patients, aware that they are suffering from cardiac arrhythmia, are filled with alarm that their heart will not stand the strain of an operation—a fear often shared by their medical practitioner. With proper pre-operative care that fear is largely groundless, and must not be allowed to induce the patient to take the far more dangerous, though naturally more attractive, path of delay.

PRE-OPERATIVE

In preparing these patients for operation it is wise to take an electrocardiogram and to have the basal metabolic rate estimated. This is generally far higher in the primary than in the secondary cases, but I have had three patients in whom repeated readings were within normal limits, although clinically thyrotoxicosis was definite, and in all three normal rhythm was restored after operation. Two to three weeks in bed is generally necessary before the operation. During that time the patient is kept on a high-calorie diet and is given half a grain of luminal daily as a sedative. Lugol's solution, in doses depending on the type and degree of thyroid change, is given; but while it is very helpful in the primary type, I have not found the same benefit in the secondary. Though unable to agree with those who find it equally efficient in either type, I have never seen the bad effects which some observers report in secondary cases. Digitalis should be given in sufficient dosage to slow the rate of fibrillation. It seldom, in my experience, restores normal rhythm, but is of great value in slowing the rate. Quinidine is reserved for use after operation if necessary, as even if it restores normal rhythm, which is exceptional, fibrillation is generally restarted at or after the operation.

OPERATIVE

The usual operative procedure adopted is a one-stage subtotal thyroidectomy. It is never enough to remove one lobe in the primary cases or to resect the nodular goitre in the secondary, and many cases of relapse are due to inadequate thyroid ablation. Stage operations are occasionally necessary in bad cases, particularly in primary thyrotoxicosis, and although far less frequently called for than before the introduction of pre-operative iodine, still at times offer the safe solution of an otherwise dangerous problem. The choice of anaesthetic will depend on the predilection of the surgeon. Since the introduction of avertin I have abandoned local anaesthesia and use avertin and gas-and-oxygen. In the skilled hands of Dr. Marston and Dr. Harris I have never had cause to regret the change. When gross cardiac failure with enlargement of the liver is present it has been our custom to omit the avertin and to use premedication with morphine, followed by gas-and-oxygen. It is important to remember that the higher the rate of metabolism the greater the percentage of oxygen required, and the amount of oxygen necessary in a bad case to maintain the pink colour which spells safety is often remarkable.

POST-OPERATIVE CARE

The post-operative care of these cases is the same as that of an uncomplicated thyroidectomy except as regards the heart. The pre-operative digitalis should be continued after operation, and a proportion of cases will resume normal rhythm on the fifth or sixth post-operative day. If they do not do so by the seventh day it is our practice to stop the digitalis and begin the administration of quinidine. This is given in the form of a definite course. Five grains are administered early in the morning of the first day of the course. On the second day this

dose is repeated and is followed by another 5 grains two hours later. On the third day three doses of 5 grains are given two-hourly, and so on until on the sixth day 30 grains in all are taken. Many patients resume normal rhythm towards the end of this course. If they do not, after a rest of five days the course is repeated. I have so far had but one patient who failed to resume normal rhythm before the end of the second course, and at his own request he was tried with a third, with a resumption of normal rhythm on the last day. Once normal rhythm has returned a maintenance dose of 5 grains twice a day is kept up for some time, and when that is stopped the patient is instructed to resume it if the pulse becomes irregular.

Summary

Auricular fibrillation in thyrotoxicosis and its relative frequency to other types of fibrillation are discussed.

Difficulties in diagnosis are mentioned, and the lack of relation between the severity of the thyrotoxicosis and the liability to fibrillation is pointed out.

Auricular fibrillation is stressed as an urgent indication for operation and the dangers of delay are indicated.

The pre-operative, operative, and post-operative care of patients with thyrotoxic fibrillation is considered.

REFERENCE

Campbell, M. (1935). *Guy's Hosp. Rep.*, **85**, 471.

Clinical Memoranda

Surgical Treatment of Chronic Ulcers

Chronic ulcers of the extremities play a very prominent part in the production of ill-health, especially in the Tropics, and in many cases constitute quite a major problem to local health centres, as these cases tend eventually to congregate in the almshouses. Among predisposing factors might be mentioned hypovitaminosis (vitamin B in particular), a diet low in protein, and iron and calcium deficiency, while spirochaetal and fusiform bacillary infection also plays a part. Most important, too, is the often present background of yaws, arteriosclerosis, varicosity, or syphilis. These ulcers in the absence of energetic appropriate treatment tend to persist indefinitely, produce appalling deformities, and render the patient unfit for his work. Ultimately chronic fibrosis and obliterative endarteritis place the lesions outside the realms of ordinary medical treatment, and the help of surgery then offers the only hope of speedy successful recovery.

In the treatment of these chronic ulcers surgical procedures should be carefully combined with medical treatment. Calcium might be given, also iron, vitamins, and high-protein diets. Varicosity, yaws, syphilis, and all other involved factors, too, must receive appropriate attention. Combined with the above the first and simplest surgical measure is to excise the edges of the ulcer, scrape the base, and apply some such preparation as 40 per cent. formalin followed by saline irrigation, or pure carbolic followed by rectified spirit. This together with suitable local treatment often effects a cure.

LOCAL MEASURES

Among the local procedures likely to prove useful the following might be mentioned as being of special merit:

1. Exposure to air without dressing. This is one of the most effective forms of treatment where infection is no longer present and the ulcer bed is level with the skin or nearly so: antiseptics here merely delay healing.
2. Normal saline dressing applied on gauze.
3. Hypertonic saline dressing where slight stimulation is needed.
4. Lotio rubra for vigorous stimulation.
5. Warm baths; these evoke vasodilatation.
6. Bier's hyperaemic treatment.
7. Insulin dressings.

The next helpful surgical procedure is skin-grafting. This, however, is especially liable to failure unless stringent precautions are taken to render these ulcers aseptic by prolonged pre-operative preparation. Thiersch grafting usually suffices, but pedicle grafting ensures a more lasting skin surface and one less liable to break down again in later years, as some of these healed ulcers sometimes do.

OPERATIONS ON NERVES

Periarterial sympathectomy may next be mentioned. This operation has of late been pushed into the background, but in the treatment of very resistant and chronic ulcers it has a definite sphere of usefulness. The operation should not be performed in young subjects, or before other simpler surgical procedures have been tried. In carefully selected cases the ensuing increase of blood supply turns the scale in favour of the patient and results in dramatic healing of the ulcer. In a series of cases treated recently this operation proved to be one of the most powerful stimulants to healing in our possession.

Intraspinal injection of alcohol might be tried in cases where a more prolonged abolition of sympathetic vascular influence is desired. It finds its sphere of usefulness in feeble patients, where more drastic operative procedures are contraindicated. The operation requires considerable care in its performance.

Where still more complete sympathetic abolition is required, and where the ulcers are of so serious a nature that the leg is practically useless and amputation is being seriously considered, lumbar ganglionectomy might finally be tried. The increase in temperature of the limb from temporary vasodilatation artificially induced by warm baths or spinal anaesthesia must first be found to be satisfactory, and even a small rise favours operation. Ganglionectomy in selected cases yields dramatic results, and I have seen a number of cases in which a leg has been saved by this operation. Under spinal anaesthesia a lumbar incision as for exposure of the upper part of the ureter is used, and the operation performed extraperitoneally.

AMPUTATION

Finally must be mentioned amputation. This, needless to say, is rarely necessary, especially where ample use has been made of other more conservative surgical procedures. Occasionally, however, it is called for as a life-saving measure, and it is surprising how dramatically a toxic, emaciated, bed-ridden patient will take a renewed grip on life when rid of a hopelessly chronic septic leg. Amputation in these cases should therefore not be delayed until it is too late and the patient perhaps loses his last chance.

To sum up: it might be stated that surgery, and especially sympathetic surgery, has a definite and very important place in the treatment of chronic ulcers, and combined with appropriate medical treatment will in most cases effect a speedy cure.

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Reviews

A HISTORY OF ANAESTHESIA

Triumph over Pain. By René Fülöp-Miller. Translated by Eden and Cedar Paul. (Pp. 438; 32 illustrations, including a frontispiece. 15s. net.) London: Hamish Hamilton. 1938.

A readable history of anaesthesia has long been wanted. It now appears from the pen of René Fülöp-Miller, a Hungarian by birth and an author by profession. He has called his book *Triumph over Pain*, and it has been admirably translated into idiomatic English by Eden and Cedar Paul, who are both well known in the literary world. The book is confessedly written for the layman rather than for the doctor, but the author has been to original sources for his information and tells the story well. His primary object has been to clear up the tangled and sordid story of the discovery of ether as an anaesthetic in the United States. He begins with some introductory chapters on surgery as it was practised before the anaesthetic properties of ether and chloroform had been recognized. In these chapters he lays somewhat too much stress on the pain suffered during a surgical operation. There are several descriptions of the sensations written by those who had themselves undergone major operations in pre-anaesthetic days, and there is the delightful story of the small child from whose bladder Cheselden removed a stone. As soon as he was unbound he sat up, saying, "Where is that sweetmeat you promised me?" Pain, therefore, when a competent surgeon operated quickly was not unbearable. The older surgeons of to-day still remember when an anaesthetic was not considered necessary for the removal of a toenail, the guillotining of tonsils, the scraping away of adenoids, or the opening of an abscess. Perhaps all classes were more tolerant of pain than the present generation.

Long, Wells, Morton, and Jackson were the chief actors in the fray, and none of them came out well. Long, who was a general practitioner in Georgia, had given ether to a student and a slave boy upon whom he operated. He thought so little about the insensibility that he never published any account of his experience. Wells was a dentist who had extracted teeth under laughing gas. He was a poor thing, was a partner with Morton, became a chloroform addict, and died in prison. Morton, also a dentist, began by extracting teeth under nitrous oxide, learnt the use of pure ether as a better anaesthetic, demonstrated its use for general surgery at the Massachusetts Hospital, took out a patent for his discovery, got into financial difficulties, and died a poor man after the Civil War. Jackson was a man of scientific attainments who appears to have suggested to Morton that he should use pure ether. He was the villain of the piece, defamed Morton, reduced him to poverty, and died insane. Neither did the United States Government come out very well in the affair. It allowed its medical officers to use ether, cancelled Morton's patent, and never recognized the importance of anaesthesia until other nations, and more particularly France, had rewarded both Morton and Jackson. The outcome of the whole business as it can now be considered dispassionately is that Jackson suggested the use of sulphuric ether to produce insensibility but never himself administered it; Morton actually demonstrated its use. Unfortunately passions were aroused and no one got a fair hearing.

The story is well told in a somewhat dramatized fashion, and, as might be expected from the unprofessional author, there are a few minor errors to be corrected. Death is not necessarily or usually painful. It is doubtful whether Cornelius Celsus was a practising doctor; he was certainly never physician to Tiberius. Dr. William Hunter was a man-midwife, or, as he would have been called in Victorian times, a physician-accoucheur; he was not a surgeon. The book is well worth reading. It is illustrated with numerous plates, the most interesting being a reproduction of Morton's first demonstration of ether at the Massachusetts General Hospital on October 16, 1846, because it contains portraits of the staff watching the operation.

THYROID, PARATHYROIDS, AND THYMUS

Diseases of the Thyroid, Parathyroids and Thymus. By André Crotti, M.D., F.A.C.S., LL.D. Third edition, thoroughly revised and enlarged. (Pp. 1,229; 262 illustrations, 39 coloured plates. £4 10s.) London: Henry Kimpton. 1938.

The third edition of Dr. Crotti's book, extending to eleven hundred pages of text, presents a full, well-documented, and well-illustrated discussion of the problems relating to the thyroid, parathyroid, and thymus glands. This is on orthodox lines; but the author, as well as reviewing the literature of the subject, has his own views. He is an adherent of the infection theory of goitre, and a considerable part of the book is devoted to his own researches, which have led him to conclude that the cause of endemic goitre is an organism of the order *Hyphomycetes*, which goes through a life-cycle of a sporulating and a resting stage. The researches, extending over a period of twenty-five years and involving much careful experimenting, are discussed at length. Rabbits under carefully observed conditions were inoculated intramuscularly with cultures of the fungus; the incidence of diffuse colloid goitre which followed was 94 per cent., while in the control series not more than 15 per cent. showed goitre. Iodine apparently failed to protect, and Dr. Crotti concludes that iodine deficiency is not the cause of goitre in these rabbits, and believes that goitre is produced by this fungus transmitted to man by drinking-water and vegetables, especially cabbage. The author allows that iodine may be a preventive of goitre and is necessary for the physiological function of the thyroid; it may even act as a bactericidal agent against the fungus. He recommends it as treatment in the incipient stage of diffuse parenchymatous goitre, however. Its use must be carefully controlled, and in his view the well-defined diffuse colloid goitre has already passed the medical stage.

The most interesting part of the book is the author's study of thyrotoxicosis. Its influence on the heart and the detailed discussion of the effects on the muscular and nervous systems, on the eyes, the skin, and the basal metabolic rate are fully and completely presented. The difficulties of treatment in the mild and acute cases, pre-operatively and at operation, are covered by an expert in the subject, and the operative technique is beautifully illustrated. The remaining half of the book includes descriptions of the anatomy and discussions of the physiology and biochemistry of these glands and their place in relation to others of the endocrine system. Less attention is given to the problems of the parathyroids, but conditions of hypo- and hyper-parathyroidism in disease are summarized. In the last four chapters the function and pathology of the thymus, the tumours arising in the gland, thymic tracheostenosis and its treatment are dealt with.

The interest and attention of the author have been given mainly to the thyroid gland. Whether his views on the

aetiology of endemic goitre will find acceptance it is early to say. Many workers favour an infective causation, probably water-borne. The author's claims that he has isolated a fungus which is capable of producing the disease under experimental conditions must be substantiated. The features and control of thyrotoxicosis as set out show the wide experience of the author, and for this alone the book will take its place as a work of reference.

PRACTICAL PUBLIC HEALTH WORK

Practical Microbiology and Public Health: For Students of Medicine, Public Health, and General Bacteriology. By William Barnard Sharp, S.M., M.D., Ph.D. (Pp. 492; 125 figures. 18s. net.) London: Henry Kimpton. 1938.

Public health as a subject of the medical curriculum is wide in its range and highly various in its applications, to such an extent that it must often present itself to the student as a mosaic of somewhat incongruous items, the precise relationship of which to one another and to the general purpose in view is far from obvious. It is a reasonable thought that if he could acquire some working experience of these diversified components the student would be placed in a better position to assimilate and understand, but the space usually allotted to public health in medical curricula in England is at present too narrow to admit of much advance in this direction. In the United States, on the other hand, if it may be permitted to draw conclusions from this recent work by Professor W. B. Sharp of the University of Texas, the subject, alike for students of medicine, public health, and bacteriology, is being considerably developed on the practical side.

The book begins by describing introductory exercises in systematic bacteriology and proceeds thereafter to examples of the investigation of the vehicles of infection. The section on clinical bacteriology is concerned with work upon the specific bacteria, and that on public health laboratory work, specially so called, with the examination of water, milk, and food supplies. There is a section also on the inspection of premises, such as houses, hospitals, dairies, waterworks, and the like. The penultimate section takes up the investigation of epidemics, vital statistics, and administrative efficiency, and the concluding section relates to parasitism by the metazoa. As the author himself points out in his preface, time will usually not permit of the average medical student being personally conducted over all the exercises described. A judicious selection, however, should be usefully informative, and the book will be found of interest by teachers in medical schools.

ABDOMINAL EMERGENCIES

A Synopsis of the Diagnosis of the Acute Surgical Diseases of the Abdomen. By John A. Hardy, B.Sc., M.D., F.A.C.S. (Pp. 345; 92 illustrations. 20s. net.) London: Henry Kimpton. 1938.

This synopsis should be helpful to the occasional practitioner of surgery faced with an intra-abdominal catastrophe. To the practising surgeon whose daily life is largely made up of seeing such cases diagnosis and treatment become almost routine, but to the general practitioner far from skilled surgical aid any guidance in the recognition of the nature of abdominal emergencies is welcome. The early chapters are concerned with surface anatomy, general physical examination, and the history, and these are some of the best in the book. We should have liked to see one devoted to a discussion of the significance of such signs as rigidity, vomiting, tenderness, and the different varieties of pain; it might with advantage be added to a second edition. The author takes a wide outlook, and includes malignant disease, such as carcinoma of the gall-bladder and of the stomach and rectum, along with the abdominal emergencies. Some of his statements are surprising; thus, on page 151 we read: "It has been stated that in 3,500 cases of chronic appendicitis, the correct diagnosis of which was proved by operation, 93 per cent. had some dilatation of the right pupil." We feel we should like to know who was responsible for this statement, and what the author of this work really thinks of it himself. Professor De Quervain's name is spelt incorrectly on page 81. We should not regard shock and vomiting as characteristic clinical features of a perforated peptic ulcer—indeed, it is our experience that patients with perforated ulcers do not vomit as a rule, and the pulse rate is usually slow for some time.

The book is very readable, and though the print is rather small the type is clear and well set out, while the black-and-white line drawings are good. We are glad to see a section on auscultation of the abdomen, because this method of examination is often neglected, and it may cast valuable light on an obscure case. For its convenient size this little book contains a great deal of information, and should prove useful to the practitioner and the occasional surgeon; the fact remains, however, that an ounce of practical experience is worth pounds of theory, and this is particularly applicable to the recognition of abdominal emergencies, so that the limitation of all works of this character should be clearly realized. The man who will derive most benefit from this work is the man who already has a good foundation of practice.

A VERSATILE DOCTOR

Doctor's Progress. Some Reminiscences. By R. McNair Wilson. (Pp. 291; frontispiece. 10s. 6d. net.) London: Eyre and Spottiswoode. 1938.

In this book we have the reflections, and a partial autobiography, of one who, trained for the medical profession, after being intended for the church, has been successively, and often simultaneously, country doctor, specialist, journalist, novelist, war correspondent, and writer of books ranging through history, politics, and economics. In his career the author has met many notable people, though it must be admitted that some of those mentioned are rather "small beer." The reminiscences of his medical teachers at Glasgow will be welcomed by many to whom Kelvin, Macewen, Muir, and others are more than names. The author's first journalistic blood was tasted as editor of the *Glasgow University Magazine*, in which post he was succeeded by the present Minister of Health. After varied and interesting experiences as locumtenent in house posts and as country doctor he came to London, where by a stroke of luck he attracted the attention of Lord Northcliffe, then proprietor of the *Times*. Dr. McNair Wilson had witnessed his first aerial flight, and though greatly excited did not forget his professional instincts, made a physical examination of the airman, and wrote an article about it. Northcliffe sent for him and put him on the staff of the *Times*. His recollections of Northcliffe are full of interest. He was put on to all sorts of jobs during the war which shortly followed, and brought off a *coup* during his short experience as a war correspondent by sending the first detailed account of the Battle of the Marne. He says little of his medical work for the *Times*, but it brought him into contact with many notable doctors, including Sir Ronald Ross, Sir David Bruce, and Sir Robert Jones, and especially with Sir James Mackenzie, whose life he after-

wards wrote. This association brought him into cardiology, and he acted as cardiologist to the Trench Fever Committee. In this connexion he pays a well-deserved tribute to Bacot, the entomologist, whose splendid and heroic work should not be forgotten.

After the war Dr. Wilson came back to practice and to journalism, varied by two unsuccessful attempts to enter Parliament, which left him with a low opinion of party politics. His days were spent in Harley Street and his evenings at Printing House Square, of which he has much of interest to say. His story of James Bone of the *Manchester Guardian*, who said he believed there was a window in the *Times* building from which even the dome of St. Paul's seemed quite small, wittily sums up the impression the author gives of an atmosphere "stimulating without excitement," which evidently inspires devotion and pride in those privileged to share it. After publishing several medical books he felt that his message in that direction had been delivered, and he turned to fiction, politics, and history.

The author says he has had a happy life, and one can well believe it. It has certainly been a varied and full one. The book shows evidence of hurried proof-reading—Mallanby for Mellanby, and Henry James's *Progress and Poverty*, for example. The ascription to Harvey of Hunter's famous advice to Jenner is another instance.

PROCTOLOGY

Anus Rectum Sigmoid Colon. Diagnosis and Treatment. By Harry Ellicott Bacon, B.S., M.D., F.A.C.S., F.A.P.S. Introduction by W. Wayne Babcock, A.M., M.D., LL.D., F.A.C.S. Foreword by J. P. Lockhart-Mummery, M.B., F.R.C.S. (Pp. 855; 487 figures. 38s.) London: J. B. Lippincott Company. 1938.

This volume is an encyclopaedia for the proctologist, but its excellent systemization should make it a valuable addition to the library of the general surgeon. The style of the author is easy and his matter most readable, and the book is beautifully printed and profusely illustrated. Each chapter is a self-contained unit, followed by an extensive bibliography. The preliminary sections deal with the special anatomy and physiology, methods of examination and record, while there is a detailed consideration of anaesthesia. Then follow chapters devoted to individual pathological conditions, which are set out from the points of view of aetiology, pathology, classification, diagnosis, treatment, and after-care. Neither does Dr. Bacon neglect the historical aspect of his subject, and due honour is paid to the pioneers in the treatment of the various conditions.

Differential diagnosis is tabulated in detailed but very clear manner. The author frequently adds his personal comments on, and experiences with, a particular technique, and his observations are generous and unbiased. It is pleasing to find in an American book so many references to the work of British proctologists. The sections on malignant disease and fistula are particularly good, but it is surprising to find no space devoted to diverticulosis and diverticulitis. The instructions on the after-care and management of colostomy are illuminating and might be framed for issue to every patient who has to suffer this disability.

Reading this book brings home the need for an international standard terminology, for the author often starts a subject with a list of synonyms. There are a few small errors in the text, notably the transposition of the numbers to some of the illustrations. Dr. Bacon has produced a fine work which, highly specialized though it is, can be read with pleasure by any member of our profession.

Notes on Books

The forty-fifth annual edition, for 1939, of the Union Castle Mail Steamship Company's *South and East African Year Book and Guide* is now published by Sampson Low, Marston and Co. The material has been carefully brought up to date, and the volume contains 1,240 pages of text. The price is 2s. 6d. (3s. post free in the United Kingdom; 3s. 3d. elsewhere), which is far less than the cost of other guidebooks of a similar nature. A feature of the yearbook is its excellent atlas by Bartholomew and Sons, containing sixty-four pages of maps in colour, all of which have been revised for the new issue.

A fourth edition of Bailey and Love's *Short Practice of Surgery* has been issued by H. K. Lewis and Co., price 28s. In spite of the fact that the book has been extensively revised and the whole of the text has been reset, it has nevertheless been possible to keep the number of pages in the new edition down to precisely the same as in its predecessors. Many new illustrations have been added, and brief historical notes in small italics are to be found at the foot of many of the pages. This book by now holds such a well-established place in the affection of students that it is unnecessary to extol its attractions.

Fifty Years a Veterinary Surgeon, by Sir FREDERICK HOBDAY, is published by Hutchinson and Co. at 10s. 6d. This retrospect of half a century shows the part which Sir Frederick has played in the advance of the veterinary science and art. In the course of a full life he has had many experiences: as Principal and Dean of the Royal Veterinary College, London; in the great war; in active practice in London; and as having performed more than four thousand operations to relieve roaring in horses, known throughout the kingdom as having been "Hobdayed." He had a very active share in the establishment of the Section of Comparative Medicine in 1923 at the Royal Society of Medicine, and was its second president, thus following Sir Clifford Allbutt. His reminiscences are introduced by Lord Lonsdale in a foreword.

Dr. ALEXANDRA ADLER has written a pleasant little book, *Guiding Human Misfits*, dedicated to the memory of her father, but she proves that she rises above "party politics," and points out how her father's theories and those of Freud may eventually both contribute to a larger conception of psychology and draws attention to the fact that Freud's latest interpretation of dreams as "attempted wish fulfilment" brings them into line with the Adlerian view that they are unfinished attempts at adjustment. She deals with the "will to power" whether in respect of the whole individual or as compensations for physical or mental inferiorities in its relations to the neuroses of childhood, problems of adolescence, criminology, and child guidance. Except that there are probably too many of these small rather superficial handbooks on psychology this book can be commended. It is published in New York by the Macmillan Company at 1.75 dollars.

A verbatim report of the proceedings of the twenty-fourth annual conference of the National Association for the Prevention of Tuberculosis, held in London at the end of June last, is now published. The volume contains 216 pages, and may be obtained from the Secretary-General, N.A.P.T., Tavistock House North, Tavistock Square, London, W.C.1, price 7s. 6d. post free.

In his *Drastische Hautreizbehandlung. Heilwege bei inneren Erkrankungen* (Leipzig: Krüger and Co., RM. 3.80 paper; RM. 4.80 bound). Dr. WALTER RUHMANN describes various methods of irritation of the skin which have yielded good results in the treatment of chronic arthritis, lumbago, bronchial asthma, angina pectoris, cholelithiasis, dysmenorrhoea, neuralgia and neuritis of every kind, etc.

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SEED AND SOIL IN RESISTANCE TO CANCER

Sir Frederick Banting devoted his Dixon Memorial Lecture[1] last year to a discussion of resistance to experimental cancer. His own work was done mainly with the Rous fowl sarcoma, which is transmissible by cell-free extracts. Rous tumours regressed in some fowls, which were then resistant to reinoculation, and the blood plasma neutralized cell-free extracts of Rous sarcoma: the fowls, however, remained susceptible to another fowl sarcoma (Fujinami), and, in accordance with earlier observations by McIntosh,[2] they developed new growths in response to injections of carcinogenic agents. The resistance was effective against Rous sarcoma only, and not against tumour growth in general. Sir Frederick compared the regression of some fowl tumours which, being produced by cell-free extracts, were necessarily composed of the host's own cells with the well-established though rare spontaneous cure of human cancer, but admits that the mechanism is obscure. He suspects that intracellular and antiviral immune bodies may combine to destroy a spontaneous tumour, yet his experiments, like many others, indicate that the antiviral bodies which neutralize Rous sarcoma agent *in vitro* are harmless to tumour cells. Apparently viruses within cells are protected against humoral antibodies. Ahlström and Andrewes[3] recently expressed the opinion that antibodies, as ordinarily understood, were not concerned in the spontaneous regression of the growths produced in rabbits by the Shope fibroma virus. Until there is better evidence that antiviral bodies destroy growths certainly produced by viruses there is little temptation to speculate whether human cancers could be cured by antibodies against the viruses which they may or may not contain.

Resistance to transplantable tumours, Banting pointed out, interferes with the *transference* of tumours and, according to current views, depends on genetic differences between the tissues of the graft and the new host. He considers that the forces which destroy a transplanted tumour can scarcely be imagined to operate in natural cancer, where the malignant cells have the same constitution as the host, but he believes that antigenic differences between host and malignant tissue might be sufficiently great to ensure the disappearance even of spontaneous cancer. Antigenic differences between tumours and the tissues of the animal in which they originate have not been certainly demonstrated. Gorer[4] found that genetic factors which influence resistance to transplantation correspond with antigenic differences, and he proposes, as a modification of the genetic theory of transplantation, that "normal and neoplastic tissues contain iso-antigenic factors which are genetically determined. Iso-antigenic factors present in the grafted tissues and absent in the host are capable of eliciting a response which results in the destruction of the graft." Gorer, however, adds that "antigenic differences between normal and neoplastic tissues are not normally capable of stimulating a defensive reaction." The assumption that a spontaneous tumour and its host necessarily have the same genetic constitution is controverted by the observations of American geneticists,[5] but the deviations have been towards genetic simplification in the tumours, and if Gorer's views be accepted it seems that the genetic changes involve a loss of some antigenic factors that might conceivably stimulate a defensive reaction. A contrary deviation in spontaneous tumours which would tend to elicit a greater defence has not been established. Recent work has not destroyed the force of Haaland's[6] fundamental observations that transplantation of a spontaneous tumour to a new position in the same host is almost invariably successful, and that an animal cannot be made resistant to implants of its own tumour by methods which protect other animals. It would be wrong to conclude that resistance to spontaneous cancer is non-existent and unattainable, for there are many observations on human cancer which point to checks and restraints upon the cancer process, but it is reasonable to doubt whether a type of resistance which could be exploited in human cancer has yet been brought within the range of laboratory investigations.

Further studies on hereditary resistance, or lack of it, to cancer have been made by Gorer[7] in an investigation of monozygotic and dizygotic twins. Monozygotic twins may be regarded as analogous to pairs of animals drawn from genetically pure strains. It can be shown that in a strain of animals with a high incidence of cancer only about half the pairs would have both members affected, and in a similar strain only about 6 per cent. of the pairs would develop a tumour about the same time.

[1] *British Medical Journal*, 1938, **2**, 807.
[2] *Brit. J. exp. Path.*, 1933, **14**, 422.
[3] *J. Path. Bact.*, 1938, **47**, 65.
[4] *J. Path. Bact.*, 1938, **47**, 231.
[5] *J. Cancer Res.*, 1929, **13**, 103; *Genetics*, 1932, **17**, 468; 1935, **31**, 471.
[6] Fourth sci. rep. Imp. Cancer Res. Fund, London, 1911, p. 1.
[7] *Ann. Eugenics*, 1938, **8**, 219.

In man the incidence of cancer does not approach that of these inbred strains, so that concordance must be regarded as of even greater significance than discordance. Another point to be recognized is that in certain animals extrachromosomal factors play a part in tumour induction, and if this were the case in man it would be expected that these tumours should show the same degree of synchrony in both monozygotic and dizygotic twins of similar sex. Gorer emphasizes the importance of grouping the material according to the site of the tumour, and points out that heredity and environment may be regarded not as alternate causes but rather as possible complementary factors in which one or the other may predominate in either a stimulating or a restraining direction. His analysis is based on over fifty pairs of monozygotic and thirty-five pairs of dizygotic twins in which tumours were found. In twenty-nine of the monozygotic twins the tumours were similar, whereas this occurred in only five of the dizygotic group. This would suggest that the site of malignancy is determined largely by genetic factors; and this is particularly striking in tumours of the alimentary tract. It is interesting to recall that intestinal polyposis was one of the first conditions to be recognized in which a hereditary condition could be regarded as a definite remote cause of cancer. In regard to tumours of the female sex organs the evidence is suggestive that matrilineal extrachromosomal factors are of importance, but on the data available a similar result could be obtained if a single dominant gene had a marked effect on the incidence of these tumours. Gorer concludes by emphasizing that the value of studies on twins can be greatly overestimated; they strongly suggest the importance of genetic factors but give little indication of the pertinent genes.

BRITISH HEALTH INSURANCE AND THE AMERICAN PROBLEM

The problems of national health services in the United States of America, and especially those associated with any system of national health insurance, though in their main aspects they may be broadly similar to those of Great Britain, present in a number of important respects—not merely in minor details—wide differences from those of our own country. These problems in the U.S.A. continue to be the subject-matter of strenuous propagandist efforts, which have occasionally assumed, both within and outside the ranks of the medical profession, a form and a bitterness which are surprising to the detached onlooker. Those viewing this situation and this controversy from afar, while not failing to note what would seem to them to be some manifest advantages which would be likely to follow the establishment of a national health insurance system in America, have never made any missionary effort to influence public opinion in that direction. What they have been seriously concerned with for many years now is to prevent misunderstanding and to correct misstatement as to the nature, effects, and tendencies of the English system of national health insurance in Great Britain. These efforts, combined with some notable publications of certain very able American investigators—mostly non-medical—have produced an appreciable limited effect, though they have been received with anything but sympathy by the authorities of the American Medical Association. It is possible that a volume by Douglass W. Orr and Jean Walker Orr may prove a powerful reinforcement. The title is *Health Insurance with Medical Care: the British Experience*,[1] and it is emphasized that the work is "by American authors for American readers." None the less, it should be welcome to many readers in Great Britain and the British Dominions.

Dr. and Mrs. Orr present an interesting and accurate survey of the British national health insurance system, together with a sufficient account of other health services—such as those connected with hospitals and with public assistance—which have necessary relationships thereto. They are concerned not so much with a detailed exposition of the minutiae of the system—though this is adequately given—as with the actual effects of the system on insured persons, on members of the medical profession (both insurance practitioners and others), and on other health and social services. Opinions from all these sources have been widely sought and are well weighed and well set out. If as regards individual instances the importance attached to a particular opinion is not always proportionate to what would be considered its worth in this country, the almost uniformly monotonous character of the evidence must be regarded as a testimony to the soundness of the ultimate conclusions. These are judiciously and wisely expressed, and may be regarded as authoritative.

At the time of the inquiry by Dr. and Mrs. Orr the revised edition of the British Medical Association's proposals for a General Medical Service for the Nation was not available, and the authors were able to refer to it only in a footnote. Nevertheless in basic principles these revised proposals do not differ from those contained in the pamphlet of 1930. One or two points of criticism are mentioned here only because the degree of accuracy maintained by the authors throughout is high. It would have been better to avoid the

[1] The Macmillan Company, 12s.

phrase "average general practitioner." The service to be rendered by the insurance practitioner is the giving of such advice and treatment "as can reasonably be expected from general practitioners as a class." The number of "incapacity references" in which the regional medical staff declared the patient to be capable of work is given as "one out of four." Here the time-lag is of importance, though it may be a matter of only two or three days; for some approved societies refer many cases of short illness, and in most cases the reference is of persons who are in process of getting better. It may well be that the actual incapacity disappears between the date that the practitioner gave his last certificate and that on which the referee sees the insured person. Hence the differences of opinion may be of even less significance. In this volume by Dr. and Mrs. Orr we have a book which may be confidently accepted, by those in America who really wish to know the truth, as a broad and accurate account of the general working and result of national health insurance in Great Britain as known to those who have in various ways been intimately associated with the system over a considerable period of years. For British readers the first part of an interesting account of the American problem appears in our *Supplement* this week.

CONTROL OF TYPHUS

The control of epidemic typhus depends in the long run on the destruction of its insect vector, the louse; the proof of this is provided by practical experience. There are occasions, however, when de-lousing measures by themselves cannot be expected to control the disease. In backward countries, for instance, where the standards of living and education of the population are low it may prove difficult, if not impossible, to eradicate the louse or to reduce its numbers below the danger level. And when this is the case prophylactic immunization has to be resorted to as an additional measure of control. There are several vaccines available for this purpose. Weigl's vaccine, one of the earliest of the typhus vaccines, is made from the intestines of infected lice suspended in 0.5 per cent. phenol saline. Another killed vaccine is that devised by Zinsser and his colleagues. For this one the typhus Rickettsia are provided by the peritoneal exudate of the infected guinea-pig and are killed by means of 0.2 per cent. formalin. The earliest attempts to immunize man against typhus were made with living virus, which was injected in minute subinfective doses, and although this particular procedure is no longer employed living vaccines prepared from strains of murine typhus are being used to-day on a large scale. In a paper appearing in the early part of last year Laigret, Durand, Belfort, and Lefaucheur[1] describe their findings with such a vaccine in the control of typhus in Tunisia. The vaccine was made from virulent rat brain, which, after being dried and powdered, was mixed with egg yolk and dried again. At the time of injection the dried powder was suspended in sterile olive oil and 1 c.cm.—the equivalent of 1/200 of a virulent rat brain—was injected subcutaneously. The object of the egg yolk and olive oil was to delay absorption of the living virus and so avoid the production of manifest infection. That this aim was very largely achieved was shown by the fact that only three cases of murine typhus developed among the 31,502 individuals vaccinated in 1936 and 1937. More data are required before final judgment can be passed on the efficacy of this vaccine in the prophylaxis of typhus, but it would seem from the information given that the procedure conferred an effective immunity. Thus in forty-two centres of population, comprising 208,000 individuals, some 31,000 were vaccinated. During the period of twenty months when these centres were under observation 2,531 cases of typhus occurred with 201 deaths, and if cases of typhus developing in the vaccinated within three weeks of inoculation are excluded only three cases of typhus were provided by the vaccinated. In Morocco a somewhat similar vaccine, that devised by G. Blanc, is being employed in the campaign against typhus. In a report of this work Gaud[2] comments on the absence of untoward reaction from this vaccine in the vast majority of the inoculated; over 200,000 individuals had received prophylactic immunization at the time the report was written, and it was only the rare individual who developed a frank attack of murine typhus. Those who did were all Europeans, and in view of this Gaud is of the opinion that Blanc's vaccine in its present form is not suitable for Europeans and should only be used for them if the need for prophylactic vaccination is real and urgent. As in Tunisia, the findings in Morocco suggest that the employment of such a living vaccine made from a strain of murine typhus is of real value in the control of typhus. In Poland, where typhus has been endemic in the eastern part of the country since the war, vaccination has been resorted to as a means of control during the last nine or ten years, and in a recent paper on the subject H. Moising[3] discusses the results obtained. The authorities in Poland have hesitated to use living vaccines of murine typhus. They believed that with such a method it would be extremely difficult to ensure that each individual inoculated received just that amount of virus necessary to produce an "inapparent" infection, and they feared the danger of starting an epidemic of murine typhus should overt infection result from vaccination in a lousy population. For this reason they have employed Weigl's vaccine with what appear to be eminently satisfactory results. The immunity conferred by this vaccine is thought to resemble that which follows an attack of the disease. The incidence of typhus in 120,000 vaccinated individuals heavily exposed to infection has been 0.09 per cent., and in the district of Jaworow, where typhus is epidemic and where 13,980 people have been vaccinated, the number of cases occurring annually has fallen from 200 to twelve.

[1] *Bull. Off. int. Hyg. publ.*, Paris, 1938, **30**, 308.

[2] *Bull. Off. int. Hyg. publ.*, Paris, 1938, **30**, 298.

[3] Ibid., 1715.

Moising also reports the successful production of an antiserum in sheep by the injection of louse-grown Rickettsia. This serum gave good passive immunity to guinea-pigs in a dose of 2 to 4 c.cm., and employed therapeutically in man in a dose of 20 to 30 c.cm. intramuscularly it appeared to have a definitely curative action and to be devoid of toxicity. Thus of forty-eight severe cases of typhus given the serum not one ended fatally, whereas the average mortality for the epidemic in question was 6 per cent. The serum has also been used for prophylaxis with apparently excellent results in a limited number of cases, and encouraged by these findings Moising states that they intend to pursue their investigation of such a serum both in the treatment and in the prevention of typhus.

MEASLES IN LONDON

The organization of the London County Council affords exceptionally favourable conditions for observation of the behaviour of epidemics. Successive medical officers of health of the County have made ample use of these facilities, and the series of special reports on measles, the fifth of which was recently published,[1] exemplifies the essentially practical outlook of Sir Frederick Menzies. In the latest report a brief account of the behaviour of the epidemic of 1935–6 is followed by special articles on administrative methods and special methods of treatment from the hospital point of view by Dr. E. H. R. Harries, the radiographic appearances of the lungs in measles by Drs. M. F. Coveney and A. C. Dixon; a statistical review of the epidemic and an account of treatment and prophylaxis by Dr. W. Gunn and Mr. W. T. Russell, and numerous detailed tables. The general impression is that the disease was milder in 1935–6 than usual. Its incidence in the school population, 63 per 1,000, was within the ambit, 60 to 70 per 1,000, observed during the last six epidemics. The fatality rate calculated from the aggregated returns of twenty-six metropolitan boroughs was 1.16 per cent., ranging from 6.23 under 1 year of age to 0.16 in the age group 8 to 14 years. The hospital fatality rate is, from selection, inevitably higher, but a decline from 7 per cent. in 1927–8 to 3.8 in 1935–6 is remarkable. With increased availability of beds a larger proportion of mild cases than formerly may have been admitted, but the rate is low for a group of town children 44 per cent. of whom were under 3 years of age. Indeed, nothing is more impressive and difficult to explain than the declining lethal power of diseases like scarlet fever and measles in the absence of a specific remedy. The extent to which the hospital policy of London has changed in the last twelve years is illustrated by the occupancy of beds during this epidemic. Of 34,024 admissions to hospitals for infectious diseases from November 1 to July 31, 13,667 were cases of measles. On April 17, 1936, 3,428 beds were occupied by this disease, being just over one-half of all the cases of infectious disease under treatment. This large body of material, together with that contained in the general and special institutions of other kinds administered by the Council, offers a valuable field for scientific investigation, both in treatment and in prophylaxis, of which ample use is being made. The present report has little of note to say on newer methods of treatment. Sulphonamide preparations have shown no decisive benefit. Oxygen-tent therapy, which has been extensively used, is, in Dr. Harries's opinion, doubtfully better than fresh-air treatment. Temporary prophylactic treatment with scarlet fever antitoxin and antidiphtheritic serum has succeeded in controlling cross infections. Probably most interest will centre on the very full analysis again made by Dr. Gunn and Mr. Russell of the result of specific prophylaxis with adult and convalescent serum and with immune globulin (placental). The observations cover 1,636 individuals and, as might be expected in connexion with this well-established procedure, confirm the favourable results of earlier investigations. Curiously, the proportion of successes has fallen slightly in the last three epidemics, perhaps because of the somewhat large quantities of weakening serum carried over from previous epidemics. Desiccation of serum may stop this tendency by preserving potency. Attenuation is still more difficult to ensure than protection, and the unwanted of these two objects is apt to be attained when the other is sought. While age-adjusted doses are still recommended for convalescent serum, it is suggested that a fixed dose of 10 c.cm. of adult serum may be adequate at any age. If this is so treatment will be simplified and economy in the use of serum achieved. Still more work appears to be required on the different placental extracts, for the effects of certain preparations seem to vary substantially. The authors make the following apt comment on their own findings: "From this study it appears that it is not yet possible to reduce the serum prophylaxis of measles to a rigid mathematical formula."

[1] London County Council. Measles. Report of the Medical Officer of Health and School Medical Officer on the Measles Epidemic, 1935–6. Pp. 94. 1938. London: P. S. King and Son Ltd. (1s.)

LIPOID NEPHROSIS

The question whether lipoid nephrosis is a distinct disease or merely one phase or variety of glomerulonephritis has never yet been settled. In this country the term "nephrosis" is generally accepted as a useful clinical subdivision, but, since the condition can only be distinguished finally from nephritis by prolonged observation or by microscopical examination, it is felt that there is insufficient evidence for the claim that it is a separate disease of completely different aetiology. A recent study by Murphy, Warfield, and others[1] is another attempt to uphold the status of lipoid nephrosis as a separate entity, and though it cannot be said that the authors have proved their case their contribution is an important one. Nine cases of nephrosis which have been observed over relatively long periods are described; of these patients two died, one of convulsions and one of pneumococcal peritonitis: six recovered completely; and one is still under observation. This is a much better recovery rate than most authors are able to record, possibly because the criteria on which the diagnosis was

[1] *Arch. intern. Med.*, 1938, **62**, 355.

made were strict, and those cases in which the disease appeared to start as a nephrosis but eventually went on to chronic nephritis were excluded from the series. There were six males and three females, and the ages varied from 3 to 34 years. No definite aetiological factor was found in any of the nine cases, and the onset in all of them was insidious. The main symptom was, of course, oedema, and the authors point out that this may be slight in some cases and that characteristically it varies much from time to time independently of treatment. There was a general but not an exact correlation between the amount of oedema and the degree of reduction of the content of protein in the plasma. A raised blood pressure was never recorded, and there was no more than an occasional red cell in the urinary sediment, though white cells and waxy casts were common and doubly refractive lipoids were constantly found. The patients who recovered have been free from symptoms and from albuminuria and oedema for several years. The kidneys from the two patients who died were examined microscopically. In one case there were the slight glomerular changes which are now admitted to occur in nephrosis: in the other there were no recognizable glomerular changes. No interstitial reaction was seen and the arteries and arterioles were normal. The glomerular changes comprised slight swelling of the epithelial cells of the capsule and thickening of the basement membrane of the capillaries. The characteristic deposit of fatty substances was especially well shown in the proximal portion of the convoluted tubules. It is stated that the most important histological distinction between nephrosis and nephritis is the lack of fibrin-containing coagula within the capsule in nephrosis. Because of this, organization and the formation of scar tissue with progressive destruction of glomeruli does not occur. Although such fine distinctions are of great interest and importance in the study of renal disease, they can probably best be interpreted as showing why a certain case ran a certain clinical course; they are not necessarily proofs that we are dealing with more than one disease.

MALARIA IN MALAYA

A considerable increase in the number of hospitalized cases of malaria is recorded in the annual report for 1937 of the Malaria Advisory Board, Federated Malay States. The figure for the year under review is 35,500, compared with 27,200 for 1936. Although meteorological conditions doubtless played a contributory part, this increase is largely attributed to the immigration of numbers of non-immune labourers consequent upon the enhanced price of tea and rubber. Also, on certain estates the programme of rubber replanting has been associated with a pronounced increase in anopheline breeding, often in close proximity to the labourers' lines. The acreage replanted during 1937 was far in excess of the figures for each of the two previous years. The gravity of the increase in the number of cases is apparent from a table giving the ratios year by year, the number 100 representing the hospitalized cases for 1933. In this table the figure for 1937 for the whole of the F.M.S. is 154, the constituent States ranging from Perak with 112 to Pahang with 286. Seven cases of blackwater fever, including four from Pahang, were reported during the year, as against four (two from Pahang) in 1936. In experimental testing of remedies for malaria totaquina Type II was administered to 358 patients. This preparation is the residue of mixed alkaloids remaining after the extraction of quinine from the bark of *Cinchona ledgeriana*, with a proportion of quinine added. There appeared to be no significant difference between the action of totaquina and quinine, but the former has the advantage in that its cost is only about half that of quinine hydrochloride. Three other substances which were tested gave less satisfactory results. With regard to chemical prophylaxis on malarious estates, extensive experimental work was carried out with a view to finding the minimum efficient dosage, and it appears that 0.3 gramme of atebrin weekly is enough to produce satisfactory results. This amount was administered to labourers employed on re-laying a section of railway in notoriously unhealthy surroundings. Only a few cases of malaria occurred, although in 1926 one-third of the labour force had been laid low, while a few years earlier one camp had to be abandoned on account of the continued ill-health of its inhabitants.

"BULGARIAN" TREATMENT OF PARKINSONISM

Of the protean manifestations of epidemic encephalitis the Parkinsonian syndrome is one of the most distressing as well as being, unfortunately, one of the most common. Once established this syndrome persists, gradually becoming more and more incapacitating. In many cases, however, it is possible in some measure to relieve the miserable condition of these patients, at least so far as the rigidity is concerned, by giving them very large doses of atropine, to which they become remarkably tolerant. Recently treatment by means of a root of one of the Solanaceae group akin to, but not identical with, belladonna has been introduced on the Continent, originally in Bulgaria, but now widely used in Italy and Germany. Neuwahl and Fenwick,[1] who described the preparation of the drug in detail from Raeff's original recipe, have recorded its effect on two cases of Parkinsonism. This number is of course far too small to allow of any definite conclusion being drawn as to the efficacy of the treatment, though the authors maintain that there was a definite improvement as regards rigidity. A comprehensive account of the Bulgarian treatment has been published by Witzleben,[2] who has reviewed the subject in two long articles. The special advantages claimed for this method over that of high doses of atropine are, first, the lower toxicity. Post-mortem examination of patients with Parkinsonism who had received huge doses of atropine revealed wide dilatation due to persistent lack of tonus in the distal part of the intestine, and in one case similarly treated acute dilatation of the stomach ended the patient's life. It is claimed that this atony of the musculature of the gastro-intestinal tract has never been known to occur

[1] *Lancet*, 1937, **2**, 619.
[2] *Klin. Wschr.*, 1938, **17**, 329, 369.

after the Bulgarian treatment and that such symptoms as dry mouth, mydriasis, and insomnia are so slight as to be of no consequence. Secondly, it is claimed that the effect of the treatment is more prolonged than that of atropine, and that consequently dosage can be much smaller. The preparation used is an alcoholic decoction of the root of the belladonna-like plant. This plant has been specially cultivated in Italy, and in Witzleben's review it is suggested that the decoction from the cultivated variety is more potent than that made from the wild plant. In addition to dosage with this decoction, patients receiving the "Bulgarian" treatment are advised to undergo their "cure" in a clinic and are put on a special diet from which meat, alcohol, coffee, and tobacco are excluded. It is difficult to evaluate the effect of such an institutional regime on a highly suggestible patient—and patients with the Parkinsonian syndrome are certainly suggestible, responding readily for a short time to any change in their treatment. The improvement that is claimed in these patients is mainly lessening of the rigidity. The tremor and the psychical disturbances remain unaltered. Denis Hill[3] has recently made a careful comparative study of the effects of decoction of Bulgarian belladonna and of English belladonna. The decoctions were made in the same way and given in the same quantities. Fourteen patients with post-encephalitic Parkinsonism were treated first with the Bulgarian belladonna and subsequently with the English, the patients being unaware that a change had been made. There was no evidence in this series of cases that there was any difference in the therapeutic properties of the two decoctions. Further evidence to this effect has been provided by N. S. Alcock and E. Arnold Carmichael,[4] who investigated the effect on five cases of Parkinsonism of Bulgarian belladonna, English belladonna, and stramonium, respectively. Their observations were checked by graphic records (obtained by means of a modified ergograph) taken from the patients at all stages of treatment. These authors found no advantage in using Bulgarian belladonna in preference to the English equivalent. It does not appear, therefore, that the early claims made for this treatment have been substantiated.

AMAUROTIC FAMILY IDIOCY

Amaurotic family idiocy is the general name for that group of diseases which is characterized pathologically by lipoid degeneration of the cells of the nervous system, and clinically by visual loss, mental deterioration, spastic paralysis and other neurological signs, epilepsy, and death. Four types of case, depending primarily on the age at onset of the clinical symptoms, are recognized: the infantile type of Tay-Sachs; the late infantile of Bielschowsky; the juvenile of Batten Spielmeyer-Vogt; and the adult of Kufs. The genetical, histological, and clinical features of all these types have been well studied. Dide and Van Bogaert,[5] in a recent paper, describe clinically and pathologically a juvenile case which showed extrapyramidal disturbances of the Parkinson type, and draw attention to the fact that the same pathological process may in other cases produce such hyperkinetic extrapyramidal disturbances as torsion spasm, athetosis, and chorea. It is obvious that in a widespread cellular degeneration such as occurs in amaurotic idiocy the neurological signs will vary with the progress of the disease and the varying affection at any one time of different groups of nerve cells. In the past, too much emphasis has been laid on the clinical and pathological subdivisions of these diseases, and very little attempt has been made to determine the chemical or even the histochemical nature of the cell degeneration. Acrimonious discussions between workers on purely theoretical data have been substituted for real research, which, in the case of amaurotic idiocy, is admittedly very difficult. Marinesco,[6] in one of the last articles he contributed to neurological literature, drew attention to the work he had done on the histochemical nature of the cell changes in amaurotic idiocy. From this work he formed the opinion that diminished oxidation due to diminished oxydase action led to accumulation of lipoproteins in the cells; these broke down and absorbed water, with a resultant swelling of the cells. Marinesco's work is not definitely established, but further research along these lines may lead to a clear understanding of this group of diseases, which are closely related to the lipoid diseases affecting the mesodermal structures. An attitude of fatalism and defeat is too often adopted towards the heredofamilial disorders that affect the nervous system. The chemical nature of amaurotic family idiocy must be capable of solution leading at least to new understanding of cell physiology, and it is not impossible that this knowledge combined with genetical research may lead to the prevention of these (fortunately rare) tragedies of human heredity.

[3] *Lancet*, 1938, **2**, 1048.
[4] *Quart. J. Med.*, 1938, **7**, 565.
[5] *Rev. Neurol.*, 1938, **69**, 1.

SCHOLARSHIPS AND GRANTS FOR RESEARCH

Our *Supplement* this week (p. 21) contains an announcement of the five scholarships which the British Medical Association awards annually and for which it is prepared now to receive applications. The value of the scholarships, which are tenable for a year, is £200 each in the case of the Ernest Hart Memorial Scholarship and the Walter Dixon Scholarship, and £150 for each of the other three. Grants to assist research are also made annually, and both scholarships and grants are awarded by the Council of the Association on the recommendation of its Science Committee. Applications for scholarships and grants should be made on forms prescribed for the purpose, which are available on request, and should reach the Secretary of the Association not later than May 6, 1939.

We much regret to announce the death at the age of 85 of Professor J. Rutherford Morison, LL.D., F.R.C.S., the distinguished Newcastle surgeon. He presided over the Section of Surgery at the Annual Meeting of the British Medical Association in 1921.

[6] *Rev. Neurol.*, 1938, **69**, 449.

SURGICAL PROCEDURES IN GENERAL PRACTICE

This is one of a series of articles contributed by invitation

TREATMENT OF HYDROCELE AND SPERMATOCELE

BY

J. SWIFT JOLY, M.D., F.R.C.S.

HYDROCELE OF THE TUNICA VAGINALIS

A hydrocele may be defined as a collection of serous fluid in the tunica vaginalis. It may be acute or chronic.

An *acute hydrocele* is usually associated with an acute epididymitis. Occasionally it arises during the course of an acute infective fever, or it may be the result of a penetrating wound of the scrotum. The amount of fluid in the sac is small, rarely exceeding two or three ounces, and the condition does not require any treatment other than that necessary for the exciting cause (epididymitis, etc.).

A *chronic hydrocele* is met with either in children or in elderly men. The idiopathic hydrocele of men about 60 years of age is the most common variety. Its occurrence has been ascribed to inflammation and to passive congestion. The fluid is clear and straw-coloured, has a specific gravity of 1024 to 1026, and contains about 6 per cent. of albumin. In old-standing cases the fluid may contain innumerable crystals of cholesterol, which may be recognized by their glittering sheen when the fluid is agitated.

Points in Diagnosis

The diagnosis depends on the finding of a smooth, painless, fluctuating swelling in one side of the scrotum. When small it has approximately the size and shape of a lemon, but as it grows it may be as large as a grapefruit. The amount of the fluid contained varies from three to four ounces to a pint. When the mass is small or of medium size it is always possible to feel the spermatic cord above the level of the fluid, and in this way to exclude the presence of a hernia; but when it is large a cone-shaped process may extend up to the external abdominal ring, which renders it difficult to palpate the cord. Irregularities in the wall of the sac due to calcareous deposits may occasionally be felt.

It is most important to distinguish between a hydrocele and an inguinal hernia. The following are the chief distinguishing points. A hernia is usually pear-shaped, the narrow end lying in the inguinal canal, while the thicker portion occupies the scrotum. The testicle can be felt either below or behind the lower portion. If the hernia contains gut the percussion note is tympanitic; there is an expansile impulse on coughing, and it can usually be reduced. A hernia is not translucent, except in children. A hydrocele, on the other hand, is confined to the scrotum, cannot be reduced, does not give an expansile impulse on coughing, is dull on percussion, is nearly always translucent, and if it is tense the testicle cannot be palpated. Occasionally one meets with huge scrotal swellings in old men, where the diagnosis may be difficult. In these cases one often finds that both a hernia and a hydrocele are present. The difficulty is increased when the hernia is irreducible. The chief diagnostic points are the presence of an expansile impulse on coughing, a tympanitic percussion note over the upper portion of the swelling, and the extension of the mass through the external abdominal ring. If the lower portion of such a mass is dull on percussion it may be due either to a hydrocele lying below the hernia or else to a mass of omentum in the bottom of the hernial sac. Of course, in such cases the hernia is the most important lesion and should receive appropriate treatment; the hydrocele is only a minor complication.

The treatment consists in (1) tapping; (2) tapping combined with injection of a sclerosing substance; and (3) excision of the sac. The indications for treatment are discomfort due to the size and weight of the fluid mass and the unsightly appearance it causes.

Tapping

Tapping is only a palliative treatment, as the fluid always accumulates again; yet many patients prefer to have the fluid drawn off three or four times a year, rather than undergo a radical operation. In children simple tapping often effects a cure.

Before deciding to tap a hydrocele it is always essential to make a careful examination by transillumination. The scrotum is grasped above the swelling; this pushes the sac with its contained fluid downwards and at the same time stretches the skin over it. A small electric torch is held against the opposite side of the scrotum. The light will then be seen shining through the fluid. The examination should be made in a darkened room. If this is impossible extraneous light can be excluded by looking through a tube of stout paper or cardboard. The objects of transillumination are to determine the presence of a clear fluid in the sac, to locate the position of the testicle, and to note the position of the larger blood vessels in the scrotal wall. If transillumination is not obtained it means that either the fluid is opaque (that is, consists of blood or pus) or the wall of the sac is too thick to allow the passage of light through it, or else that the swelling is caused by a solid tumour of the testicle. When transillumination is obtained one notes the position of the testicle, as it forms a dark area encroaching on the posterior margin of the illuminated portion. Its position should be confirmed by palpation. It may not be possible to feel the body of the testicle, but one can always make out the epididymis, which should lie immediately behind the dark shadow thrown by the testicle. Occasionally the testicle is inverted and lies with the epididymis anteriorly and the body of the testis posteriorly. If a hydrocele develops in such a case the fluid will lie behind the testicle, and the latter is liable to injury unless the condition is recognized. Inspection of the vessels of the scrotal wall is easy if the parts are strongly illuminated. They stand out like thick pencil lines running over the surface of the scrotum. It is always easy to find a clear space between them, as they usually lie more than an inch apart. One such spot should be chosen for puncture and be marked by painting the skin with tincture of iodine.

The smallest procurable trocar and cannula should be used for tapping a hydrocele. Those usually sold for this purpose are unnecessarily large. Hamilton Bailey recommends using a Barker's spinal needle. This is a very satisfactory instrument, especially for injection treatment, as it has a well-fitting stylet and can be attached to a syringe. The scrotum is held as mentioned above, the skin at the site chosen for the puncture being made tense by pressing the sac towards this point. As a rule

the best site for puncture is on the anterior wall, near the lower extremity of the swelling. The trocar is plunged through the scrotal wall in an upward direction. Its point will then pass well in front of the testicle. The trocar is withdrawn, and by keeping up the pressure on the upper portion of the sac the fluid will be quickly evacuated. When the sac is empty the cannula is withdrawn and the puncture wound sealed with a little collodion.

Injection Treatment

This method is not suitable for all hydroceles. It should be reserved for cases where the parietal layer of the tunica is not thickened and rigid; where there is no disease of the testicle; and where there are no complications, such as inguinal hernia. An old-standing hydrocele, with rigid or calcified walls, never gives a good result, as it is impossible to obliterate the cavity. A hydrocele, no matter how large it may be, that can be strongly transilluminated and in which the testicular shadow is not enlarged is suitable for injection treatment.

The technique is quite simple. The sac is punctured by means of an instrument that can be attached to an ordinary 10 or 20 c.cm. syringe. For this reason a Barker's spinal needle is very suitable. Modern spinal needles, such as those introduced by Howard Jones and by Pitkin, are too narrow for this purpose, and one may have difficulty in emptying a hydrocele through them. If the trocar and cannula are employed the latter must be modified to fit the syringe. The hydrocele is tapped as described above and the sac is emptied as completely as possible. From 10 to 20 c.cm. of sterile water or normal saline is injected into the sac and allowed to return. This is repeated two or three times in order to wash away any remaining hydrocele fluid, which might protect the wall of the sac from the sclerosing fluid. The sclerosing fluid, which should previously have been placed in a second syringe, is then injected and the scrotum is massaged so that the fluid comes in contact with every part of the sac. The needle is withdrawn, the puncture sealed with collodion, and the patient fitted with a suspensory bandage. He should be warned that the fluid may re-accumulate and that in a few days the scrotum may be as large as before. If at the end of a week or ten days there is still a considerable amount of fluid in the sac a second injection may be given. A third is rarely needed.

Any fluid used for the treatment of varicose veins is suitable for injection into a hydrocele sac. Probably the best is quinine and urethane. The solution is put up in 2 c.cm. ampoules. One ampoule should be used for each injection. Five c.cm. of a 5 per cent. solution of sodium morrhuate is also extensively employed. Both these solutions are satisfactory. They should be purchased in ampoules, already sterilized, and the injection should be given with strict antiseptic precautions.

Operation

An open operation is indicated for complicated or long-standing hydroceles in the adult. It is also indicated for hydroceles occurring in children if tapping fails. It can be performed under general or under local anaesthesia. The technique of the latter method is as follows. The skin is cleansed and disinfected with a 2 per cent. solution of picric acid in spirit. Iodine is unsuitable, as it often blisters the skin of the scrotum. The external abdominal ring is defined and a wheal is raised over it by means of a solution of 1 per cent. novocain, injected through a fine needle. The point of the needle is then introduced into the subcutaneous tissue and a few drops of the solution are injected into the deeper layers of the skin at the lower border of the wheal, forming a second one. This is repeated as often as is necessary to produce a series of wheals extending the whole length of the incision, usually two and a half to three inches. The subcutaneous tissue is then infiltrated beneath and to each side of the line of wheals. The next step is to infiltrate the spermatic cord. This can be done either before or after the skin incision has been made. In the former case the cord is picked up between the finger and thumb at the point where it emerges from the external ring and a fine needle inserted into it. Usually no blood can be sucked back into the syringe when the piston is pulled on, but if blood is withdrawn it shows that a vein has been punctured. In this case a fresh point should be chosen into which the needle is introduced. An injection of 5 c.cm. of the 1 per cent. novocain solution is then slowly made into the tissues of the cord, the needle being slightly advanced as the injection is given. The solution will infiltrate the loose areolar tissue of the cord and block the nerves in it. If the operator is not accustomed to infiltration anaesthesia he may find it easier to cut down on the cord before infiltrating it and then inject the novocain solution into it under sight. In this way the whole operation is rendered painless, but the patient will feel a drag, or sensation of stretching, when the testicle is dislocated out of the scrotum.

The incision begins at the external ring and is continued downwards on the antero-lateral aspect of the scrotum as far as necessary. It need never exceed three inches in length. The wound is deepened until the spermatic cord is exposed in its upper part. One or two small superficial vessels will be severed; these must be caught up and tied. When the cord is exposed it is followed downwards until the sac appears. This, with the testicle, is dislocated out of the scrotum. A patient under local anaesthesia may feel a drag or a pull at this stage of the operation, which is relieved by puncturing the sac and allowing the fluid to escape. There will then be no difficulty in dislocating the testicle. The sac is separated from the surrounding tissues and widely opened. It is important to note the position of the epididymis, as in large hydroceles it may become separated from the testis and lie behind the sac. The redundant portion of the tunica is then excised, keeping close to the testis and epididymis, but taking care to avoid the latter, which is easily done if the wall of the sac is held up to the light before section and the incision made through the thin translucent portion.

The last step in the operation is to secure complete haemostasis. This is most important, as the slightest oozing will result in a haematoma. The bleeding may arise from the cut edge of the remaining portion of the sac or from the deep surface of the scrotal wall. In the former position individual vessels are caught up and tied, but oozing may arise from a considerable length of the cut edge, without any visible bleeding-point. This haemorrhage is most easily stopped by oversewing the edge with a continuous suture of fine catgut. When the operator is certain that all haemorrhage is definitely arrested the testicle is returned into the scrotum and the wound closed by means of interrupted silkworm-gut sutures. Many surgeons insert a small drain at the lower angle of the wound, while others make a stab wound for drainage at the most dependent part of the scrotum. If the patient is operated on under local anaesthesia one should remember to infiltrate the tissues before making this incision. Drainage is not necessary if the haemostasis

is perfect, but as one can never be quite certain on this point it is generally advisable to insert a small tube for two or three days.

The wound is dressed in the usual manner with dry sterile gauze. A large pad of cotton-wool is then applied and is held in place by a firm spica bandage. The drain is removed on the third day. The stitches are taken out on the eighth day. The wound may then be sealed with collodion, over which a thin layer of cotton-wool is placed, and a suspensory is fitted. The patient is allowed up and may return home the following day.

POST-OPERATIVE COMPLICATIONS

The most common post-operative complication is a haematoma, which is always due to imperfect haemostasis. The scrotum becomes greatly distended with blood clot. The patient may complain of a dragging pain or a feeling of distension in the parts. The treatment consists in removing one or two stitches and evacuating the blood clot. An ordinary gum-elastic catheter is passed into the wound till its tip lies in the most dependent part of the cavity. A syringe is then attached, and the clots are washed out by means of a strong stream of sterile water. Manipulation of the scrotum assists in the process by breaking up the clot. A drainage tube, about the size of a pencil, is then inserted and a firm bandage applied. The dressings are changed every day as long as there is any oozing. When it has ceased the tube may be removed.

A haematocele is a collection of blood in the tunica vaginalis. It may be the result of an injury, but is much more commonly caused by puncturing a scrotal vessel when tapping a hydrocele. The scrotum rapidly fills up again after tapping, and although fluctuation can still be obtained, translucency is lost. If neglected the blood clots, and a firm solid mass which may resemble a new growth of the testicle forms in the scrotum.

If the patient is seen before or soon after the blood in the sac has clotted an open operation should be performed. The sac is exposed, the blood is evacuated, and the redundant portions of the parietal tunica are excised, just as in the operation for radical cure of a hydrocele. In neglected cases the clot becomes organized and the testicle is atrophied by the pressure of the new-formed fibrous tissue. Orchidectomy is then the only feasible operation.

SPERMATOCELE

The ordinary type of spermatocele is a retention cyst of the epididymis. It usually arises from the upper pole and rarely exceeds an inch in diameter. The fluid is somewhat opalescent from the presence of innumerable spermatozoa, but translucency can always be obtained. The swelling resembles a supernumerary testicle placed above and behind the normal organ. Small spermatoceles do not require treatment, as they do not give rise to symptoms. Occasionally the collection of fluid becomes larger and may reach the size of an orange, in which case excision is indicated. The testicle is exposed as described above. The sac forms a prominent swelling on the surface of the epididymis, to which it is attached, over an area rarely exceeding the size of a penny. It is easily dissected free, but it should not be punctured, as one is then certain that the whole of its wall has been removed. If the sac has been opened it is easy to leave a small portion of its wall adhering to the epididymis, which may give rise to a recurrence. All bleeding-points are carefully ligatured and the wound is closed without drainage.

Frequently multiple cysts are present or the whole epididymis is cystic. In these cases the cystic portion, or the whole epididymis, should be excised. After the testicle has been exposed the tunica vaginalis is opened and the epididymis is exposed from both aspects. The cystic portion is then dissected free from the body of the testicle, and from the vessels of the cord, by a few touches of the knife. One should keep as close as possible to the epididymis in order to avoid wounding the terminal branches of the spermatic artery. Bleeding-points are tied off and the wound closed without drainage. In many of these cases the cysts are filled with clear watery fluid, which does not contain spermatozoa.

Nova et Vetera

"MEDICAL LIFE"

A PLEA FOR ITS CONTINUANCE

In a profession overburdened with a multiplicity of technical journals, those addressing themselves exclusively and without hesitation to exploring medical history and literature are so few that the tidings of an impending death in their ranks would tend in many circles to stir up the twin emotions of anxiety and resentment. Chronologically, *Medical Life*, founded eighteen years ago and to this day edited by Dr. Victor Robinson, Professor of the History of Medicine at Temple University School of Medicine, Philadelphia, appears to be the first and only monthly medico-historical periodical in the English language, and in its time some of the most distinguished historians in America and in Europe have enriched its pages with their pens. Of outstanding value for reference and for research have been its numerous Special Numbers exhaustively reviewing such miscellaneous topics as epilepsy, radium, medical journalism, primitive medicine, and diabetes, and with a profusion of striking and frequently unusual illustrations commemorating men like Gorgas, Maimonides, Jacobi, Pasteur, and Ronald Ross. Latterly *Medical Life*, having with a magnificent though possibly unpractical gesture stripped itself of its bulk of paid advertising matter, has been published at a financial loss, borne solely by its founder-editor, and now it is threatened with extinction unless a sufficient number of new subscribers should appear. A committee has been formed for the continuance of *Medical Life*, which includes such eminent men as Henry E. Sigerist, George Sarton, James J. Walsh, David Riesman, and William Allen Pusey. Their appeal for subscriptions (three dollars per annum, to be sent to 4, St. Luke's Place, New York City) to support a journal which fills an undoubted place in the cultural life of its country of origin should find an echo in the hearts of many readers and authors on this side of the Atlantic. Unfortunately it is sometimes much easier to appreciate the worth of a periodical after its death.

PIETER CAMPER, 1722-89

The Faculty of Medicine of the University of Groningen, in collaboration with the Netherlands Journal of Medicine and the Netherlands Society for the History of Medicine, Mathematics, and Natural Science, will commemorate on April 29 and 30 the life and works of Petrus Camper, who died one hundred and fifty years ago. The memory of this great physician, anatomist, obstetrician, and artist, who for ten years was professor of medicine at Groningen, will be honoured in a solemn session of the Senate and be accompanied by an exhibition of his complete works and drawings at the Academic Hospital. Addresses will be given by Dr. B. W. Th. Nuyens of Amsterdam, and by various professors at Groningen. The exhibition will bring together for the first time all the original drawings made by Camper, anatomical and other, now in the possession of the Library of the Netherlands Society for the Promotion of Medicine at Amsterdam, and of the University Library at Leyden. The secretariat of the committee for this commemoration is at 63, Oostersingel, Groningen, Holland.

THE HEALTH OF LONDON

ANNUAL REPORT AND STATISTICAL TABLES*

The County of London, with its four million people, living in 800,000 houses, spread over an area of little more than one hundred square miles, continues to enjoy excellent health, immunity from epidemics, and a low death rate. The death rate in 1937 was 12.5 per thousand, a fraction lower than the death rate for Great Britain and Northern Ireland. It has, indeed, stood at a lower figure: in 1935 it fell to 11.4, but in general since 1921 it has been a little over 12. In the first quinquennium of the present century the deaths from all causes were 16.4 per thousand living. The death rate from heart disease, cancer, diabetes, and influenza has increased during this period—though as to influenza the figure is so fluctuating that no deduction should be drawn—but on the other hand the rate of mortality from pulmonary tuberculosis has fallen by more than one-half as compared with the average for the early years of the century, the mortality from non-pulmonary tuberculosis has fallen still more, and the deaths from diphtheria, enteric fever, and other conditions which exacted a high toll of life thirty or forty years ago have greatly lessened in number.

Deaths among Infants

The infant mortality rate for the County of London in 1937 was 60 per thousand births, as compared with 58 for England and Wales, 80 for Scotland, and 77 for Northern Ireland. Here again the figure has remained fairly uniform since 1922, though for the years 1911–22, assisted no doubt by the adverse conditions arising from the war, it stood at 97. Most of the killing diseases of infants have lost their sting. Taking the average of the four years before the war the infant mortality from measles was 3.40; in 1937 it was 0.05. Tuberculosis and bronchitis among infants show comparable reductions, and the only increase among the principal diseases which sustain a high infant death rate is in influenza. Nevertheless, London, though administratively one unit, is by no means homogeneous, and the rate of infant mortality ranges from 37 in Stoke Newington and 40 in Woolwich to 73 in St. Marylebone and 83 in Kensington.

Another health index to London is provided by the annual number of notifications of infectious disease. In every category in which comparable figures are available there has been a large decline of incidence. Even within the last ten years the notified cases of diphtheria have fallen from 12,000 per annum to below 7,000, and of scarlet fever from 13,000 to below 8,000. Small-pox has reached vanishing point; no case was notified in London during the three years 1935–7. Notifications of polio-myelitis and polio-encephalitis numbered 108, but in 12 of these the diagnosis was not confirmed; of the 96 confirmed cases 6 proved fatal. There were 216 notifications of fevers of the enteric group in London in 1937—a lower figure than the previous year, notwithstanding the fact that on the southern border of the county, in the borough of Croydon, a severe outbreak of typhoid took place in the latter part of the year.

Maternal Mortality in London

Deaths from puerperal fever numbered 46 and from other puerperal causes 80, giving a rate per thousand live births of 0.84 and 1.45 respectively. The lowness of the rate in the eastern boroughs, where the total mortality ranged between 2.2 and 2.7, is noteworthy; the borough with the highest mortality is Paddington with 4.5. A comparison has been made to show the effect of environment on deaths in pregnancy and childbirth among married women. The figures were taken for a group of boroughs—Hampstead, Lewisham, and Wandsworth—in which the population could be described as better circumstanced, and a group—Bermondsey, Finsbury, Bethnal Green, Shoreditch, and Stepney—with a poorer population. The total death rate in the better-circumstanced boroughs was 2.92 and in the others 2.41. In regard to miscarriage and abortion among married women the rate can only be calculated per thousand legitimate births instead of per thousand pregnancies, as the number of pregnancies is not available. Thus calculated, the poorer boroughs show a somewhat higher mortality than the others, but the figures may be rather too small to represent stable values.

The use of the Council's hospitals for maternity work continues to increase. The number of births in the general hospitals was just upon 20,000, compared with half that number of 1931. The pressure on the Council's maternity beds has become a serious problem, but it is hoped that the inauguration of the domiciliary midwifery service will substantially relieve the strain. The year 1937 saw not only the largest number of births that ever took place in Council hospitals, but actually the smallest number of maternal deaths yet recorded in those hospitals. The deaths due to pregnancy or confinement after the twenty-eighth week fell from 4.9 per thousand in 1933 to 1.58 in 1937, and of those patients who had had ante-natal care in the Council's clinics only 1 in 1,000 died. The very low abortion death rate for 1936 was not maintained, but the deaths from this cause were still only half the number for the three preceding years.

Several new departures are recorded in connexion with the Council's hospitals. One notable event was the decision to erect a new general hospital on the site of St. Benedict's at Tooting, to contain 318 beds. Another was the opening of a new observation unit at St. Pancras institution. The year was of interest to the dental services. It was the first year of trial of a whole-time dental service at two hospitals. The remarkable thing is the contrast as between the two hospitals in regard to anaesthetics. At St. Alfege's, Greenwich, where some 1,100 patients were treated, general anaesthetics were used on 300 occasions; at St. Stephen's, Fulham, where 1,433 patients were treated, general anaesthetics were used only on 28 occasions. It is stated that for some reason the average number of teeth extracted per patient at the former hospital was more than twice the average at the latter, and that Greenwich patients are more insistent on the use of "gas" than their neighbours further up the river, but this does not seem to explain the discrepancy.

Research Work

Mention is made of the medical research work carried on in the Council's hospitals. Permission was given at certain general hospitals for investigations of the effects of a theobromine preparation in relieving respiratory disturbances occurring in association with heart failure; the action of emphyllin on patients suffering from Cheyne-Stokes breathing; and the efficacy of a series of injections of extracts of polymorphonuclear leucocytes in the treatment of inoperable cancer. Approved research workers were also allowed, at certain hospitals, to interview surgical patients for the purpose of studying their psychological histories as controls in connexion with an investigation, from the psychological point of view, into cases of asthma, hay fever, and allied conditions, and of cardiac pain. The great increase of work in the pathological service limited the time available for personal research. Nevertheless, an impressive programme of activities of the pathologists is set out, including work on leptospiral jaundice, red blood cell count and haemoglobin percentage, food poisoning, and the value of prontosil in the treatment of scarlet fever.

Many of the arrangements and statistics set out in these volumes have already appeared in our columns

* *London County Council. Annual Report of the Council, 1937.* Vol. III (Part I): Public Health (1s.); Vol. IV (Part I): Public Health—General and Special Hospitals (2s. 6d.). Westminster: P. S. King and Son, Ltd.

from time to time when reporting the activities of the London County Council; but the wealth of statistical tables, especially in the volume on general and special hospitals, provides a mine of information for the curious and the diligent, and to the public health officer and hospital administrator they are all but indispensable.

THE CYCLOTRON

ITS APPLICATION IN MEDICINE

The cyclotron, an apparatus which has aroused great interest in physical laboratories all over the world as a source of high-energy particles for producing nuclear transmutations, and among cancer research workers as a possible new weapon in the radiological treatment of malignant disease, was the subject of a lecture during the Physical Society's new year exhibition at South Kensington. The lecturer was Dr. J. D. Cockcroft, F.R.S., of Cambridge, where one of the two cyclotrons in this country is installed. The apparatus is extremely complicated and costly—one authority has mentioned £30,000 as the initial cost, including that of the skilled supervision necessary to get it into working order—and it has not yet emerged from the stage of physical experiment, not to speak of clinical trial. But its promise is evidenced by the fact that energies exceeding six or eight million volts have been obtained, and the future may well see a further extension into the region of cosmic-ray energies. The cyclotron was first developed at Berkeley University, California, between 1929 and 1932, and by the latter year that first apparatus was producing energies up to 1¼ million volts.

Dr. Cockcroft, whose lecture was mainly addressed to the advanced physicist, described the construction of the cyclotron. In mentioning the very large magnets which were required in view of the strength of the magnetic field, he said that the instruments in this country—at Cambridge and Liverpool—required magnets weighing about fifty tons. The surprising thing was that the cyclotron worked at all, for the ions might have to travel a total distance of 60 metres before attaining their final energy, and a small initial divergence from the median plane might be expected to cause the greater part of them to be lost. In fact, the cyclotron only worked because the electrostatic and magnetic fields happened to have the shape required to produce focusing and so prevent the ions from straying too far from the plane.

Applications in Physics and Biology

The applications of the cyclotron at the moment were mainly three: (1) as a powerful generator of neutrons for use in physical and biological experiment; (2) as a machine for producing in large quantity the radio-active forms of the common elements; and (3) as a means of producing extremely energetically charged particles—protons, deuterons, and alpha-particles—and permitting the study of their interaction with matter. Neutrons, said Dr. Cockcroft, had a special interest from the point of view of biological experiment, because their reaction with matter differed markedly from that of *x* rays and gamma rays. When neutrons pass through matter they project nuclei of atoms, but not electrons. These projected nuclei then produce ionization along their tracks many times more dense than the ionization along the tracks of electrons. It is possible, therefore, that the effects of neutrons on some organisms may be substantially different from those of *x* rays. Thus it has been found that while a certain minimum exposure to *x* rays is required to inhibit cell division, no such minimum occurs in the case of neutron radiation. Experiments have given rise to the hope that neutrons may have a differential effect on normal and on malignant tissue, and that such difference may be favourable to their use in the treatment of malignant disease. Clinical work to test that possibility has been started at the University of Berkeley, where the first cyclotron was installed. Collimated beams of fast neutrons have been produced by passing them through a lead-lined tube in a tank of water, and in that way the ionization in the beam owing to the fast neutrons was shown to become one hundred times greater than the ionization outside the beam. Seventy centimetres away from their target the neutrons were found to produce an effect on the skin equivalent to 12 *r* per minute of *x* rays—an intensity adequate for therapeutic purposes—and erythema of the skin and regression of tumours have already been observed.

Dr. Cockcroft also referred to the possible usefulness of the production by the cyclotron of artificial radio-activity by proton, deuteron, alpha-particle, and neutron bombardment of elements. The high particle velocities obtainable enabled radio-activity to be produced by charged particles over the greater part of the periodic table. An activity in copper of about 10 curies had already been obtained. In biology the radio-active substances were already finding important applications. The possibility of the use of these radio-active substances as substitutes for radium in cancer treatment was being considered. For such purposes the substance must have a reasonably long life and emit energetic gamma-radiation. Dr. Cockcroft said that, although the production of a source of 10 curies intensity seemed to be within sight, it was barely possible yet to answer the question whether the method would compete economically with radium. It seemed likely, however, that advantage would be taken of the wide variety of chemical properties of these elements to obtain selective absorption in different parts of the body, and work has already begun on radio-iron, radio-iodine, radio-bromine, and radio-phosphorus.

THE GOVERNMENT EVACUATION SCHEME

The plans of the Ministry of Health for the transference of the child population in time of war were made known to local authorities last week. This question is being dealt with by the Ministry of Health rather than by the Home Office (which is concerned with the maintenance of order) because it is considered as largely a health problem, especially one of water supply and sewage disposal, and also because the Ministry is in close touch with local authorities upon whom the burden will fall. The main purpose is to break up the concentration of child population in London and large industrial centres. England is a small country, and no part of it can be said to be completely secure, but some parts are regarded as safer than others, and in any case it can be said that an acre of ground with 500 people on it is not as safe as an acre with five. The Minister of Health speaks for the entire community in saying that children should be the first to be evacuated. Most of the adult population will be engaged in one form or other of national service or in maintaining so far as possible the ordinary life of the country, and it is considered to be in the national interest to avoid the indiscriminate movement of large numbers of people from one area to another. In the administrative county of London there are 800,000 children under 15 years of age, and probably as many in London beyond the border. The task will be to evacuate as many of these as possible, the parents' permission being obtained in all cases. The names of the evacuation, neutral, and refugee areas have since been published by the Ministry.

Plans for Billeting

The question of camps was first considered, but it was felt that unless the camps were very well and solidly built there would be not only discomfort but positive danger to health, including risk of spread of infectious diseases

through overcrowding. Moreover, 2,000 such camps would be necessary for the accommodation of London children alone. Therefore recourse is to be had to billeting. The local authorities in the "safer" areas are being asked to make a survey of the surplus rooms available in houses in their area, the basis taken being one habitable room per person. A point was raised with the Ministry's officials regarding health precautions with such wholesale billeting, but the questioner was reminded that school children are medically examined fairly thoroughly, and that medical care would continue while evacuation was proceeding. The children will be evacuated school by school to their appointed place. Teachers or other helpers will accompany them, possibly up to a maximum of one to every ten children. The school medical officers will probably also go to the places where the children are billeted. The reply to a question whether it was intended to augment the medical services in the rural areas to deal with the influx of children was inconclusive; the plans are still in the shaping. Children under school age will be accompanied by their mothers or other responsible persons. Arrangements will be made by the Government for transport and for increased supplies of food to be made available to shopkeepers in the receiving areas.

Health, Finance, Registration

In the survey which is immediately to be made it is considered that health visitors and sanitary inspectors will prove useful agents, with suitable voluntary assistance. Discretion and tact are urged upon the inquirers; they have no right to enter houses, in the face of objection, for the purpose of obtaining information. At the same time the point is made that if householders with suitable accommodation to spare do not agree voluntarily to accept children they may properly be informed that they may be required to take other persons. Householders will be paid at the rate of 10s. 6d. a week where one child is taken, and at the rate of 8s. 6d. where there are more than one. In the case of the pre-school children accompanied by their mothers, householders will be asked to provide lodging only at the rate of 5s. a week for each adult and 3s. for each child. The local authorities concerned received at the end of last week the registration forms on which there is provision for setting out the addresses of the dwellings, the number of habitable rooms, the number of persons ordinarily resident, the possible number who can be accommodated, the provisional decision of the local authority as to the number which should be taken, and, with other particulars, the amount of additional bedding required. It is stated that in some cases there may be difficulty as to the adequacy of the water supply, especially where the household is dependent upon a well. This should not ordinarily arise when the added population to a house will be only one or two children, but the knowledge of the local authority will no doubt enable it to deal with exceptional cases. In addition to houses there may be other buildings which could be brought into use to supplement the domestic accommodation, but schools should not be taken, as any surplus space there will be required for the education of the transferred children.

CAPETOWN HEALTH REPORT

Satisfactory statistics are produced in the annual report (1936–7) of the Medical Officer of Health, City of Capetown. General mortality, infant mortality, and mortality from respiratory and diarrhoeal diseases all show the lowest figures ever recorded. Comparing the figures for the year under review with the average over the previous five-year period the general death rate is seen to be diminished by 14 per cent., the infant mortality rate by 23 per cent., the death rate from tuberculosis by 18 per cent., from bronchitis and pneumonia by 32 per cent., and from diarrhoea and enteritis by 34 per cent. The improvement was greatest in the non-European section of the population. Nevertheless, despite this improvement, the health statistics of the coloured people still compare unfavourably with those of the whites. The non-European death rate per thousand is 23.47, the European 10.33; infant mortality rate 128.86 against 41.03; tuberculosis death rate 4.76 against 0.82; maternal mortality rate 5.63 against 2.74. From a population comprising almost equal numbers of Europeans and non-Europeans the latter show far the larger number of deaths from bronchitis, all forms of pneumonia, and infantile diarrhoea. The number of deaths from the last-named disease was 324 among the coloured and 16 among the white. On the other hand, both cancer and diabetes caused more than twice as many European as non-European deaths.

Plague and Rats

No cases of plague are reported from Capetown itself, although during the year under review there were fifty-two human cases in the Union, including thirty in Cape Province. The City Council's rodent staff destroyed in the course of the year 3,642 brown rats, 4,030 black rats, and 619 gerbilles. The report comments on the remarkable increase in the number of black rats and the decrease in the number of brown rats in recent years. In 1926 the rat-catching staff destroyed 8,409 brown rats and 1,206 black rats. Since that date the number of brown rats caught annually has decreased to less than one-half, while the number of black rats has increased more than threefold.

Local News

ENGLAND AND WALES

Vital Statistics for 1936

The Registrar-General's Statistical Review of England and Wales for 1936, Text Volume (H.M. Stationery Office, 3s.), contains the official commentary on the two volumes of vital statistics already published—namely, Tables Part I, Medical, and Tables Part II, Civil. It deals with the statistics of births, deaths, and marriages registered in 1936, the estimates of population, registrations under the Legitimacy Act and the Adoption of Children Act, and with the numbers of Parliamentary and local government electors. The estimate of the population of England and Wales in the middle of 1936 was 40,839,000 persons, of whom 19,591,000 were males and 21,248,000 females. The total is 194,000, or 0.48 per cent., greater than the estimate for the previous year and 887,000, or 2.2 per cent., greater than the population at the census of 1931. The figure of 887,000 is made up of the excess of births over deaths, about 599,000, and the balance of migration, 288,000. The average ages of the estimated population are 32.9 years for males and 34.8 for females. These are gradually increasing; in 1931 they were 31.8 and 33.5 respectively, and in 1921 29.9 and 31.2. The live births registered in 1936 were 605,292, or 6,536 more than in 1935. The corresponding birth rate was 14.8 per 1,000 population. A comparison with the rates in many other countries shows that only two of them—Austria and Sweden—had lower rates. The number of male births exceeded the number of female births in the ratio of 1,054 to 1,000. Stillbirths formed 4 per cent. of the total births registered. The natural increase in 1936—that is, the excess of live births over deaths—was 109,528, as compared with 121,355 in 1935 and 120,832 in 1934. The rate is 2.7 per 1,000 population.

ANALYSIS OF DEATHS

The report reviews in detail the mortality from various causes during the year 1936 and, in addition, contains a number of special studies. A comparison of the death rates for London and the aggregates of county boroughs, urban districts, and rural districts during 1911–14 with

those recorded during 1931–6 shows that owing to the more rapid decline of urban mortality the disadvantage as measured by mortality to residents in a large town compared with residents in the country is to-day little more than half what it was in pre-war days. Infant mortality due to prematurity, congenital causes, and birth injuries shows no improvement since 1930–2, though for all other causes in the aggregate the rate has fallen considerably. A comparison of mortality among married women at ages 35 to 65 from cancer of the uterus, breast, and ovary, according to the social class of the husband, shows an increasing mortality from uterine cancer in passing down the social scale, but for cancer of the breast and ovary the trend is in the opposite direction. Rheumatic fever death rates by sex and age for the years 1891–1900, 1911–20, and 1935–6 indicate a decline during the last twenty years at every age period, but the proportionate decrease has been much greater at ages over 35 than in childhood. The death rate attributed to angina pectoris continues to increase rapidly, but mortality attributed to other cardiovascular disease and arteriosclerosis has not changed much in the last ten years. From an analysis of deaths caused by road accidents it appears that more than half the fatalities were those of pedestrians, about one-fifth were of pedal cyclists, another fifth were of motor cyclists, and the remaining tenth were of occupants of cars and other vehicles.

IRELAND

Londonderry Medical Society

The annual dinner of the Londonderry Medical Society was held in Derry on December 17 last, the president, Dr. G. V. F. Leary of Castlederg, being in the chair. There was a large attendance of members and guests, not only from the vicinity of Derry but also from Tyrone, Donegal, Antrim, and Belfast. The Mayor of Londonderry, Sir James Wilton, was present, and among the Belfast guests was Mr. S. T. Irwin, president of the Northern Ireland Branch of the British Medical Association. The toast list was a happy one, and stimulated a most hospitable evening. The entertainment programme was up to the usual standard, special attention being given to an amusing monologue in Biblical language inspired by events in a court compensation case. The honorary secretary of the society, Dr. J. A. L. Johnston, was congratulated on all sides for the success of the event, and also thanked for the energy he has displayed in reviving this old-established medical society in Ulster during the past eight years.

Puerperal Emergencies

The annual report for 1937 of the Royal Maternity Hospital, Grosvenor Road, Belfast, records 1,729 admissions with twenty maternal deaths, a percentage mortality rate of 1.15. Eleven of these maternal deaths followed emergency admissions, which numbered 396, with a percentage mortality rate of 2.77. In this hospital a special unit, the Rea block, is set aside entirely for the treatment of potential, suspected, and established sepsis in any form. To this block are admitted as emergencies septic cases which have been delivered in their own homes; thither are also transferred cases delivered in the clean unit of the hospital which may later fall into the above categories. The report gives a very full summary of each fatal case. With regard to maternal morbidity, which showed a rate of 6.7 per cent., an analysis of eighty-two cases includes twenty-one of puerperal sepsis, sixteen of mastitis, and fourteen of infection of the urinary tract. A further series of statistical tables, of which there are eighteen in this report, deal with cases classified under the appropriate headings—for example, eclampsia gravidarum, prolapse of the cord, and Caesarean section. Appended is the district report, from which the following figures are taken: new patients for ante-natal treatment 1,882; new patients in infant clinic 493; total number of patients confined in their own homes 644.

Diphtheria Immunization and Mosquito Control in Belfast

In the Report on the Health of the County Borough of Belfast (1937) stress is laid on the importance of diphtheria immunization. It is stated that within a period of seventeen months 11,000 children completed the immunization course. Lectures have been given to parents, leaflets issued at child welfare centres and at schools, and advertisements inserted in newspapers, drawing attention to the dangerous nature of diphtheria as a children's disease and the desirability of immunization measures. "If diphtheria can be suppressed in Chicago and Toronto, surely this can be accomplished in Belfast." With regard to mosquito control the report states that considerable areas of breeding-ground have now been drained or filled in, thereby extensively reducing the necessary amount of spraying and oiling. This is still, however, considerable; 3,018 gallons of "Civic" fluid, 130 gallons of mixed crude oil and paraffin, and 435 gallons of petroleum fluid were used during the year. Six striking photographs showing mosquito breeding-grounds before and after draining and cleansing illustrate the report. It is stated that some of the worst breeding-places have been entirely wiped out by these measures.

Correspondence

Mechanical Respirators

SIR,—It is singularly unfortunate that Sir Frederick Menzies's strong criticism of Lord Nuffield's gift of Both respirators should have been delayed from the date of its announcement (November 24, 1938) until to-day, a week after Lord Nuffield's departure on a trip as far afield as New Zealand, and a few weeks after Mr. Both had sailed for Australia via U.S.A. A letter so strongly worded as to arouse widespread publicity in the lay press calls for an answer, and I gladly avail myself of the opportunity of putting before you the relevant facts.

During the summer I was asked to give a lecture on artificial respiration. I decided to prepare a film on the subject, and to make it more interesting and instructive by incorporating in it many of the mechanical devices for supporting respiration. I told Dr. Topping of the L.C.C. of this film, and he kindly introduced me to Mr. Both at the L.C.C. Western Fever Hospital. There I and one or two provincial M.O.H.s saw the Drinker and Both respirators working side by side on patients recovering from respiratory paralysis. Dr. Topping modestly did not mention his own work on respirators, and he and the sister in charge told us that, in their experience, the Both was the best machine of its kind on the market. The only tragedy was that there were so few of them. I am informed that at this time the combined number of Drinkers and Boths in the country was nineteen.

The film on artificial respiration included views of the Drinker, Both, Bragg-Paul, Burstall, and other effective but less-known machines, all in action. A month later Lord Nuffield made a tour of inspection of the Medical Research Institute which bears his name. Amongst other things he saw the film, which was prepared under the supervision of Dr. C. L. G. Pratt, physiologist to the Department of Anaesthetics. A few days later Lord

Nuffield asked me to call on him. He told me that he had read in the papers that there was a shortage of "iron lungs" in the country, and asked three questions: (1) Were they the things he had seen in our picture?—Yes. (2) Why were they not more available?—Expense. (3) If many hospitals throughout the Empire were to have one, was there a reasonable prospect of three lives being saved?—Undoubtedly. His next remark was, "Well, I'll give instructions at once for 1,000 to be made." The answer to Sir Frederick Menzies's first question, therefore, is that Lord Nuffield was not persuaded by anyone. The idea was a bold one of his own, and my regret is that I cannot claim the honour of having suggested it to him. Sir Frederick appears to overlook the fact that Lord Nuffield has ideas of his own and is a man of action.

Next came the question of choice of machine. I have had opportunities of seeing many different machines in action, both abroad and in this country, and told Lord Nuffield what I knew of the various machines. I told him that much experimental work was being done, which would probably result in the production of an improved machine in the future. His reply was, "If I had waited to produce the perfect car I would now be bankrupt; we must get on with the best available now and improve on it as we go along." Already improvements, suggested by the Medical Research Council and the staff of Morris Motors, are being incorporated in the Both. If your correspondent's criticisms were carried to their logical conclusion and acted upon it would mean that nothing which is capable of improvement would be issued in any numbers to the public.

Like the L.C.C., the Department of Anaesthetics at Oxford was experimenting with a respirator of its own design, of which we had considerable hopes. I asked for a delay until Lord Nuffield had seen our new machine in action. He was adamant, and said he was going to produce at once the best machine which had already stood the test of time. This decision seems to be correct, as so far it would appear that the optimism neither of the L.C.C. nor ourselves was justified. It may be that, as Lord Nuffield's gift has met the urgent demand, we are now both aiming at an even more perfect respirator than would have satisfied us formerly.

The Both machine was chosen because it was considered to be the best for general purposes and because of its simplicity. Lord Nuffield does not consider that the ideal respirator has yet been made, but he thinks, and I concur, that the Both is the best of its type at present available. Incidentally it lends itself to mass production and is not covered by patents. (Despite this last fact, Lord Nuffield pays Mr. Both a royalty on each one produced.)

The question of numbers is of importance. Sir Frederick Menzies asks: ". . . Who was responsible for advising that no fewer than 5,000 mechanical respirators were required?" The answer is again simple—No one. Lord Nuffield did not ask for nor, so far as I am aware, did he receive advice on the question of numbers. He issued instructions, and they were that "every hospital within the Empire which might have a reasonable expectation of the use of a respirator should be supplied with one," and he fixed the upper limit at 5,000. Surely it is difficult to cavil at these generous sentiments. By writing to Cowley or Oxford your correspondent could have found out by return of post the true state of affairs. Sir Frederick Menzies continues: "My only object in writing this letter is to express the fervent hope that even now it may not be too late to prevent such a wanton waste of private benevolence." He has taken six weeks to think out his impassioned and urgent plea. Even if, some time ago, Sir Frederick Menzies had taken the trouble to write a personal letter to Lord Nuffield, it is improbable that the latter would have desisted from a plan with such therapeutic possibilities.

Linked with the question of numbers is that of distribution. This has been left in my hands. I am indebted to the Colonial Office for advice on allocation to parts of the Empire outside Great Britain. The various High Commissioners, or the representatives in London of all parts of the Empire, have been written to asking them to ascertain the requirements of each particular Dominion or Colony. It was felt that medical authorities on the spot could decide on numbers and local distribution much better than could we at Oxford—or, for that matter, the L.C.C.

Distribution within Great Britain is not simple, and it is manifestly impossible to please everyone. Some would like to see the respirators grouped in large centres, others would prefer them to be widely distributed. The points for and against are hardly relevant to this letter, but, on the whole, widespread distribution is favoured. The "iron lung" has been associated too much, even in medical minds, solely with the treatment of infantile paralysis. In some other conditions, if the respirator is to be of help, it must be at hand and used without delay.

Some weeks ago the county medical officer of health for Devon kindly volunteered suggestions about the requirements of his particular county, and these proved so helpful that immediately afterwards I wrote to the M.O.H.s of every county in England, Scotland, and Wales asking for similar advice, which will be borne in mind when distribution is made.

In a scheme of this magnitude some wastage is inevitable. Again I quote Lord Nuffield: "It seems a pity to think of some of the respirators being used as coal-scuttles, but it is more tragic still to think of the possibility of a life being lost through the failure on my part to spend £25 to £30." Sir Frederick Menzies asserts pontifically that it is a mistake to distribute the apparatus "to all and sundry, when it is certain that the vast majority of the hospitals that will apply for one have not the slightest idea how to use a mechanical respirator correctly." It is not to be wondered at that, with so few machines hitherto available, a working knowledge of them is not widespread; on the other hand, there are many signs of a desire to learn. In this respect Sir Frederick will be relieved to hear that, during the past six weeks, we too have not been idle. Comprehensive arrangements have been made to instruct recipients in the use and care of the machine—for example, they will be informed that an instructional film has been made, dealing both with the nursing and mechanical technicalities, which is available for hire or purchase at a small cost; that during February and March a respirator will be on view and a responsible official will be on duty at the Radcliffe Infirmary, Oxford, every afternoon to demonstrate the machine; that arrangements have been made with an outside firm to service the machine for £1 a year; that a pamphlet is being prepared for distribution incorporating such information as might be of value. If Sir Frederick cares to make generally available some of the "vast fund of practical experience" it may be that it will contribute to the common good.

It is perhaps not irrelevant to point out that two-thirds of the cost of these respirators is accounted for by the power unit. In the event of the process of evolution rendering the present machine obsolete, it by no means follows that the power unit would be wasted, since it can be utilized for types as dissimilar as the "Drinker" and the "Burstall," and might quite well be adapted to the (as yet unrealized dream of the) perfect and universal respirator.

In connexion with this scheme hundreds of letters have been received at Oxford. Only two or three have been critical, and these have offered constructive criticism—if alternative suggestions of spending his Lordship's money merit such a description. Lord Nuffield has often remarked that it is much easier to make money than to give it away—however worthy the object—without raising malice in some quarters. Potential benefactors of less foresight may be discouraged by the prospect of their generosity accentuating differences of opinion which could well be composed for the general welfare.—I am, etc.,

Pembroke College, Oxford, Jan. 7. R. R. MACINTOSH.

SIR,—It is not my business to answer the questions which Sir Frederick Menzies asks in his letter on mechanical respirators (January 7, p. 35), but I hope that the following information may allay some of the anxiety caused by the threat of the distribution of 5,000 Both apparatuses. Towards the end of last year the Medical Research Council received a letter from the Ministry of Health, dated November 2, 1938, in which it was suggested that an investigation of the relative merits of positive and negative pressure methods of mechanical artificial respiration might be a suitable subject for the Medical Research Council. While arrangements were being made for this purpose news was received of Lord Nuffield's decision to provide a large number of Both respirators. As a member of the Medical Research Council I was appointed chairman of a committee of experts, including medical officers of the London County Council, and two meetings were held before Christmas. The committee was of the opinion that continuous and rapid progress was occurring both in the design of apparatus and in the organization of services for its most effective utilization. We were given reason to believe that it was difficult to stop the wheels of mass production once they had been put in gear, but we nevertheless wrote to Lord Nuffield suggesting that the distribution of Both respirators should, in the first instance, be limited to the larger hospitals, preference being given to orthopaedic hospitals and infectious diseases hospitals. As a result of these representations I imagine that it is unlikely that the present distribution of mechanical respirators will exceed 500. Moreover, these machines will carry certain improvements, recommended mainly as a result of the London County Council experience.

The committee considers its task one of great urgency and we hope to present a report in the spring.—I am, etc.,

Radcliffe Infirmary, Oxford, Jan. 7. L. J. WITTS.

SIR,—With further reference to my letter on the above subject which appeared in the *Journal* of January 7 (p. 35), may I be allowed to put forward the following suggestions for consideration as an alternative to the "broadcast" distribution of a mechanical respirator to any hospital which chooses to apply for one:

(1) That the distribution should be limited, for the present at all events, to those hospitals which are either well-known orthopaedic hospitals or fairly large hospitals for infectious diseases, for the reason that these are the hospitals where patients requiring such mechanical aids to respiration are most likely to be found.

(2) That consideration should be given to the desirability of organizing what I may call for convenience "flying squads" at certain carefully selected geographical centres throughout England and Wales, and that at these "centres" a certain number of mechanical respirators, not necessarily of one type, should be stationed, together with the necessary trained medical, nursing, and engineering staff, ready at any time to go out with the "respirator" to any place in the area allotted to the "centre" where it is required.

It appears to me that this would be a much more satisfactory and much more efficient and economical arrangement than a "broadcast" distribution to any hospital which chooses to ask for one. Apart altogether from these advantages there would be accumulated what we want—that is, more knowledge and experience with regard to the best design and the best way of bringing about an organization for the most effective utilization of mechanical respirators. We have a great deal to learn yet on these points, and one of the best ways is to pool experience. I submit that something of the kind of organization I have suggested above is worth thinking about, together with a central committee to act as a "clearing house."—I am, etc.,

London, S.W.3, Jan. 8. FREDERICK MENZIES.

Ulcerative Colitis

SIR,—In the *Journal* of December 31, 1938, Dr. E. R. Cullinan (p. 1351) and Dr. Erich Wittkower (p. 1356) presented evidence of the important part played by psychological factors in the development and course of ulcerative colitis, but they underestimated the importance of infection. Dr. Cullinan recalls that ulcerative colitis was "discovered at necropsy" by Wilks in 1875, but he fails to mention that Wilks described the disease as anatomically indistinguishable from dysentery, a fact confirmed since then by all pathologists with experience of both bacillary dysentery and ulcerative colitis. The endoscopic appearance of the bowel is also identical in the two diseases.

In the following table the results of Dr. F. A. Knott's examination of the stools and proctoscopic swabs taken from sixty-one consecutive cases of ulcerative colitis at New Lodge Clinic are analysed. The importance of *B. asiaticus* was well shown in a case of regional colitis in which the organism disappeared from the stools immediately after excision of the diseased portion of the colon, in which it was found in both the lumen and submucosa directly after removal (*Guy's Hosp. Rep.*, 1937, **87**, 187).

I. *B. dysenteriae* Flexner	4
B. dysenteriae Flexner (very late lactose +, mannite +, dulcite −, non-motile)	3
B. dysenteriae Sonne	1
II. *B. enteritidis* Gaertner	1
Salmonella morgani	11
B. asiaticus	14
III. *B. coli* variants and other coliform strains of doubtful pathogenicity:	
Parenteric bacilli (unclassified motile strains, lactose −, saccharose +)	11
B. coli haemolyticus	2
IV. Proteolytic strains of possible secondary pathogenic power:	
B. proteus	5
B. pyocyaneus	2
V. Virulent micrococci:	
Strept. haemolyticus β	2

Mackie has recently published a similar study of eighty-five cases of ulcerative colitis in New York, from which the following table is taken (*J. Amer. med. Ass.*, 1938, **111**, 2071):

I. Dysentery: Fllexner	14	III. *B. faecalis alkaligenes*	15
Sonne	6	*B. proteus*	14
Shiga	1	*B. pyocyaneus*	12
II. Salmonella	45	IV. *Strept. haemolyticus β*	14
B. morgani No. 1	16		

My conclusion from a study of the clinical history, endoscopic appearance, morbid anatomy, and bacteriology of ulcerative colitis is that it is a sequel of an acute or subacute infection of the colon with one of the many organisms capable of producing the "bloody flux," a disease which has been endemic in Great Britain since the

fourteenth century and is still common in all parts of the country (A. F. Hurst and F. A. Knott, *Lancet*, 1936, **2**, 1197). It is liable to become chronic and develop into "ulcerative colitis" in individuals who are predisposed by their anatomical, biochemical, and psychological make-up. —I am, etc.,

New Lodge Clinic, Windsor Forest, Jan 7. ARTHUR F. HURST.

Radiotherapy for Metrorrhagia

SIR,—In your issue of January 7 (p. 35) Dr. Elizabeth Hurdon draws attention to the warning (*Journal*, December 24, 1938, p. 1327) issued by the Marie Curie Hospital respecting the radiological treatment of metrorrhagia in young women. She says: "The remarks were especially intended to suggest that the custom of giving an excessively large radium dosage in order to sterilize the patient is to be deprecated because of the assumption of the possibility of the inheritance of irreversible gene mutations resulting in abnormal births."

One is tempted to ask, Whose custom is this? and, What is the necessity for this warning? Such mutations have never been produced in human embryos, and surely if the radiation is of sufficient intensity to sterilize the patient irreversible gene mutations will not occur, and if the radium produces the destructive lesions she describes in her concluding paragraph, necessitating hysterectomy, there is still less to fear from this aspect, though much to fear for the patient from radium treatment. What is important, however, is the truth of her statement that "there is no question as to the value of radiation treatment when properly applied in suitable cases; there is also no doubt that it is definitely preferable to hysterectomy for persistent haemorrhages." But I would draw attention to the fact that, properly applied, radiation in these cases does not include the exhibition of radium or necessitate the so-called deep *x*-ray therapy, both of which are frequently followed by ill effects even of the severity which Dr. Hurdon describes.

Simple metrorrhagia and metrorrhagia associated with fibroids respond so favourably to superficial *x*-ray therapy without producing the slightest reaction other than improvement noticeable to the patient that it should be regarded as a specific. With this treatment I have never known one failure or one unpleasant reaction, and the patients treated remain most grateful friends.

Unfortunately, reports of radium and deep *x*-radiation clinics, as in the case of the Marie Curie Hospital Report, draw attention in the preamble to lesions produced by radium and deep *x*-radiation which are destructive and often agonizing in character, resulting in some cases in exquisite torture to the patient who previously had a relatively painless lesion; yet in the analysis of results such reports give the years of survival or percentage cured, but no percentage of the cases showing unfortunate or disastrous response to radiation. The late Mr. Percy Furnivall told us (*Journal*, February 26, 1938, p. 450, and March 12, 1938, p. 589): "I would not wish my worst enemy the prolonged hell I have been through with radium neuritis and myalgia for over six months," and that the numerous letters he received "show that the disastrous results occur more frequently than I had any idea of." The full value of his personal account will have been wasted if the reports of therapy departments fail to include a full account of the damages as well as the benefits of radiation.

We know that many simple conditions such as metrorrhagia and fibroids and a very few malignant lesions respond so favourably even to the so-called superficial *x*-radiation that it may be regarded as a specific cure, but it is very doubtful yet whether the risks of intensive or prolonged radiation justify the enthusiasm which is sometimes displayed.—I am, etc.,

Birmingham, Jan. 7. JAMES F. BRAILSFORD.

Circumcision

SIR,—My great respect for Mr. Kenneth Walker may be shared by others, and it is this consideration that prompts me to make comments on the subject of circumcision, which is dealt with by Mr. Walker in your issue of December 31, 1938 (p. 1377). In my opinion the decision that circumcision should be performed on an infant or child can but rarely be made by a surgeon, and this opinion is strengthened by the way in which Mr. Walker obviously respects psychological theories and yet fails to come to grips with the real clinical problems. He includes this paragraph:

"It should be borne in mind that psychologists are disposed to lay great emphasis on the psychological trauma that may result from the carrying out of circumcision on children. Care should therefore be exercised not to frighten a nervous child; and generally it is advisable to make use of some such basal narcotic as nembutal, paraldehyde, or avertin."

For this we must be grateful, but how much more understanding than this is required of the doctor if he is to avoid doing more harm than good! Mr. Walker writes:

"Because of the disability that may arise in later life, circumcision should always be carried out in an infant with a congenital phimosis—that is to say, with a prepuce that cannot easily be retracted over the glans penis."

This is indeed an extraordinary statement. So far as I know it is true of a large proportion of little boys that the prepuce cannot easily be retracted, and yet at 4 or 5 years or in early puberty the maturation processes provide for normal function in this as in other respects. Why not wait for this natural development? And it is surely a queer indication for an operation on a baby that he may one day be liable to venereal disease! When I am looking at a baby and contemplating the infinite complexity of his immediate and prospective physical and emotional development, I do not find myself being anxious about the possibility of his contracting syphilis or gonorrhoea in twenty years' time.

As for the psychological considerations, these simply cannot be squashed into the words: "Care should be exercised not to frighten a nervous child." If, as I believe, the emotional development of the infant is highly complex and a constant struggle on his part to get management of violent excitements, violent fears, violent rage, violent despair, then any interference that can be avoided must be avoided. It is not that the operation of circumcision is in itself always worse than any other; at a very early age penis sensation may not be so highly organized as mouth and skin and other sensations. But the whole operation is nearly always a big event, and when (as one often does) one finds that a baby has changed in character since circumcision, one has to look to the screaming and the baby's loss of confidence in his mother for the actual trauma.

The worst part, however, seems to me to be the after-care, which is seldom described by the surgeons, who nevertheless still tend to leave hospital circumcisions to the recently qualified residents. I wish to emphasize the fact that I have seen a great deal of acute distress in mothers and babies during the weeks following circum-

cision—distress which I remember acutely whenever the question of circumcision of a child is raised. Sexual excitement during changing of dressings is very common, and prolonged priapism not rare. The effect of this artificial awakening of genital sensuality has not been worked out, so I cannot say whether it is beneficial or harmful, but effect there must be, and the doctor who orders circumcision is responsible for it. Unless the operation goes well the mother is forced to be preoccupied with the baby's penis for several weeks, and the effect of this on her is often far from negligible. On the other hand, parents are apt to feel better for having their babies circumcised, and in certain cases this must weigh in favour of the operation.

In discussing the complications, Mr. Walker does not really make it clear that in a number of cases a sore meatus develops, with formation of a scab, and this is most difficult to treat. This is also commonly met with apart from circumcision, but it is not just a matter of neglect. Micturition becomes extremely painful. The effect on the baby of experiencing pain instead of pleasure on micturition, and a recurring inability to pass water, is most complicated, and the fact that in many cases there is eventually a psychological as well as a physical recovery should not make us ignore the very real dangers that do exist.

The remote effects of circumcision are various and often not important. However, it is well known that some boys are very sensitive about their genital: it is too big or too small; it is crooked; the prepuce is too long or too short. Such boys are apt to be very worried about having been circumcised, especially when they are of such a race that they would not expect to find themselves circumcised as a matter of religion. The only conclusion to be drawn here is that surgical interference generally, including surgery of the penis, is to be avoided, except in so far as religion overrides all the other psychological factors. Actually, a rather wide experience has shown me that very few babies require circumcision, and that the vast majority of circumcisions that are done in hospitals are done on no scientific principle. Medical science is built on the gravestones of superstitions, and here is another foundation-stone that has refused to be laid.

It is possible that there is some reason why those who are especially competent to perform the operation of circumcision are unlikely to be good judges of its indications. Apart from all other considerations, anyone who has witnessed one death of a healthy baby under anaesthetic will thereafter work on the principle that no interference whatever with the natural process of development of a baby should be undertaken unless it be unavoidable. The conclusion that I draw from this is that circumcision is not to be done unless the baby cannot pass water because there is practically no hole; and if the prepuce can be pulled back so far that the meatus of the glans can be seen, then phimosis cannot be doing harm. Doubt only exists in the case of some very long prepuces, which easily develop sores, and in which it is difficult to prove the existence of a proper channel for the urinary flow. When any doubt exists as to the need for circumcision, the need is not acute, and then, if the operation is to be done, there is time for a search for the ideal moment for operation. For instance, it should not be performed as one nurse is leaving and a new one coming, or coincide with moving house or with any other change in the baby's environment or routine. It would be generally accepted to-day, I think, that Mr. Walker is wrong in thinking of enuresis and masturbation in this connexion, except as contraindications to the operation.

It is possible that Mr. Walker agrees with much of what I have written, but if so he will perhaps admit that in the course of a purely surgical article he has made some statements that lead away from the aim that I feel he has in view—namely, to base diagnosis as well as operative procedure on a study of facts.—I am, etc.,

London, W.1, Jan. 3. D. W. WINNICOTT.

SIR,—Having read Mr. Kenneth Walker's article on circumcision in the *Journal* of December 31, 1938 (p. 1377), may I point out the following. We often circumcise because the grandmother wishes it, because we like surgery, or because it is lucrative; many because they unconsciously hate the penis and so "believe in it," or because the surgeon has been circumcised and wishes to "hit back." Unconscious motives; but let us beware if we construct arguments for circumcision. It is an aesthetic mutilation and a tragedy, for the spot of most intense sexual sensation is the inner foreskin next the fraenulum. Masturbation is normal in small children, and only the guilt inculcated by our "treatment" is harmful. Circumcision will be felt by the child to be a punishment, and will make him feel for life that sex sensation is wrong and may be followed by great misfortune. So always explain to the mother and where possible do no more than stretch the foreskin. In necessary cases do not remove the foreskin, but enlarge it by three vertical slits inside the edge and stitch them to become horizontal slits, and dress with vaseline. Give anaesthetics to the smallest infant, for we do not know the impression of pain on its mind and its possible effects.—I am, etc.,

Edinburgh, Jan. 2. H. M. DENHOLM-YOUNG.

Milk and Asthma

SIR,—In his letter in the *Journal* of December 31, 1938 (p. 1394), Dr. H. Gordon Oliver attributes the evil influence of raw milk on asthmatics to monilia, and therefore forbids it, and, for a like reason, butter and cream. While I forbid raw milk I always allow butter, and generally cream. Yet I cure many adult asthmatics and nearly all asthmatic children. Of course I do other things as well. So while monilia may sometimes be a partial cause of asthma it is not *the* cause. Feinberg found that of twenty-eight asthmatics giving positive reaction to yeast only three reacted to monilia. Poison to all asthmatics is hot milk at bedtime, yet they often take it to "keep their strength up" and wheeze all night in consequence, though heating will have killed monilia in the milk. Patients at once improve on stopping the boiled milk.

Histamine (derived from histidine by removal of CO) is a poison that has been shown experimentally to produce bronchial spasm, vascular permeability, and eosinophilia—three characteristic features of asthma. It has been found in asthmatic sputum. Milk contains no histidine, but Koessler and Hanke showed quite definitely that in the presence of certain colon bacilli and an acid reaction in the gut milk will produce histamine. In the *Journal* of December 17, 1938 (p. 1262), there is a review of Maurice Loeper's book on alimentary intoxications. He finds that in 80 per cent. of the cases the cause of the toxicity is histamine. The most fruitful line for treating asthmatics is to regard asthma not as a disease but as a symptom of some underlying condition, often toxic, and to treat that, not forgetting that sometimes other factors may be more important. I quite admit that it is impossible to cure an asthmatic in a mould-laden house. Other measures than attention to the bowels or desensitization are needed.—I am, etc.,

Glasgow, Jan. 3. JAMES ADAM.

Resuscitation after Electric Shock

SIR,—During 1937 583 industrial accidents due to "electricity" were reported to the Factory Department of the Home Office; thirty-five proved fatal. A suggestion has reached me from the British Thomson-Houston Co. Ltd. that an "iron lung" or Drinker respirator might be installed in factories and other places in which there are special risks of electric shock. The successful treatment of electric shock depends in large measure upon the prolonged and continuous application of sound methods of artificial respiration. Recovery has been known to take place as long as three hours after the accident. It is known also that deaths have been caused by the use of incorrect methods, and especially by rough handling of the patient. It would appear, therefore, that there should be a useful place for the Drinker respirator in the treatment of electric shock, provided that the patient can be safely transported to it.

Sir Henry Gauvain, writing in the *Lancet* (1937, **2**, 1327), has pointed out that the "iron lung" demands highly skilled personnel to operate it successfully. This personnel consists of trained doctors and nurses and a skilled mechanic. The apparatus must always be kept in working order. In certain large industrial undertakings these conditions could be fulfilled, but in general this is not the case. Nevertheless, a method is available that would overcome this difficulty and enable the electrocuted person to be brought from the site of the accident to the nearest hospital. In 1932 Dr. F. C. Eve invented the "rocking stretcher" (ibid., 1932, **2**, 995). In a joint paper, published in 1933 (ibid., **2**, 740), Drs. Esther Killick and Eve showed that artificial respiration by means of the "rocking stretcher" was highly efficient, safe, easy to perform, and needed a minimum of skill.

The principle of the stretcher (which is manufactured by Messrs. Siebe, Gorman of London) is to use the dead weight of the abdominal viscera to obtain rhythmical alterations in the size of the thoracic cavity. The stretcher consists of a small metal stand on which is hinged an inclined-plane stretcher. The patient is placed face downwards upon the inclined plane. Fixing-straps are adjusted. The stretcher is then rocked upwards and downwards through angles of 45 degrees; the rocking is carried out by hand and is not unduly exhausting. It is only necessary to keep the movements regular and at a normal breathing rate. When the head is down the weight of the viscera forces the diaphragm upwards, causing air to be expelled from the lungs. When the foot of the stretcher is depressed air is drawn into the lungs. The stretcher is easily portable and can be loaded on to an ambulance or van and artificial respiration continued during the journey to the hospital.

It would appear therefore that the most efficient "rescue service" for accidents caused by electricity would be: (1) Schafer's method of artificial respiration pending the arrival from the works first-aid post of Eve's rocking stretcher; and (2) rapid transportation on Eve's stretcher to the nearest hospital, where, if necessary, the patient could be put into the Drinker respirator. Shock is the serious danger in all cases of electrocution, and could be much better combated in hospital. We can find no record of the Drinker respirator having been used in this country hitherto for resuscitation purposes. It probably has been used in America. We have heard of one case in which it was successfully employed in treatment after an overdose of drugs. Might not a "rocking stretcher" be a useful addition to the equipment of all large ambulance stations?—I am, etc.,

HOWARD E. COLLIER, M.D.,
Department of Industrial Hygiene and Medicine.
University of Birmingham, Jan. 3.

Treatment of Acute Osteomyelitis

SIR,—The letter from Mr. G. A. Bagot Walters in your issue of January 7 (p. 37) is encouraging to those of us who practise the conservative treatment of acute osteomyelitis. This line of treatment appears to be gaining ground, and I am convinced that its general adoption would save the lives of many children. For the information of those who are interested I may say that, in the course of three years which have elapsed since I wrote an article on the subject, I have treated fourteen more cases of the disease. Thirteen patients made good recoveries and one died. Many of the patients were very ill on admission. The bones affected were: femur, five; tibia, five; fibula, ilium, humerus, and os calcis, one each. The patient who died was a girl aged 4; she was very ill when first seen and died five days later without operation. Post-mortem examination showed a little pus in one tibia and suppurative pericarditis. I cannot conceive that any operation would have saved her.—I am, etc.,

Northampton, Jan. 7. C. C. HOLMAN.

"The Spinal Lesion"

SIR,—Your correspondent Dr. W. Hargrave Wilson writes in the *Journal* of December 31, 1938 (p. 1394): "Even a series of radiographs . . . might not demonstrate . . . that the vertebrae were not moving with their fellows, because the normal movement . . . is so small. . . . It is, however, clinically possible to detect this lack of movement, and to palpate. . . ." Does he mean "by palpating"? This would be an entirely different matter. How is it clinically possible to detect that the fifth dorsal vertebra has moved "a fraction beyond the extreme point of normal extension"? Is there any certainty, or is the result arrived at by guesswork? The radiologist can supply us with visible and permanent records; he can give accurate measurements of displacements, taken from any angle, and these records can be enlarged. Are we to discredit these in favour of Dr. Wilson's unsupported assertions? "Seeing is believing" is an old saying because sight is more reliable than touch; whenever we wish for accuracy we try to convert the sense of touch into sight—for example, in the clinical thermometer and the sphygmomanometer.

If osteopaths hope to prove that touch is more reliable than sight they have small chances. Mere assertions of tactile skill will hardly convert a profession trained to depend on accurate observation.—I am, etc.,

Sunbury-on-Thames, Jan. 4. KENNETH WOLFERSTAN.

Play Therapy and Child Guidance

SIR,—In your leading article in the *Journal* of December 3, 1938 (p. 1150), on play therapy and child guidance you refer to a paper by Mrs. Melanie Klein in which she described her use of toys in therapeutic work with children. Doubtless this was the paper on "Criminal Tendencies in Normal Children," read to the Medical Section of the British Psychological Society in March, 1927, and published in 1927, not 1928 (*Brit. J. med. Psychol.*, **7**, Part 2). Other papers referring to the use of play in child analysis had been published by Mrs. Klein in England as early as 1923 and 1926.

Your issue of December 17, 1938 (p. 1281), contains a letter from Dr. Margaret Lowenfeld and Dr. Ethel Dukes in which, after remarking that "it is important for the wise development of this treatment, as of any other, that different forms of this therapy should be

tinguished and their origin and evolution known," the claim is made that Dr. Lowenfeld's particular use of play in the treatment of children arose "parallel with *but independently of* psycho-analysis." (My italics.) I would like to draw attention to what Dr. Lowenfeld herself stated in her own paper, "A New Approach to the Problem of Psycho-neurosis in Childhood" (*Brit. J. med. Psychol.*, 1931, **11**, Part 3). In referring to the differences between her own method and that of psycho-analysis, she said: "Although my admiration for the work of Mrs. Klein and her group is very great, and *in spite of the fact that without it my own work would not be possible* . . ." (My italics.) From Dr. Lowenfeld's own words it would thus appear that, whilst the treatment of children by means of play *in groups* may be her specific contribution, her use of play as a means of therapy was in its beginning inspired by Mrs. Klein's work, but quite early diverged from the latter both in technique and in the interpretation of results.—I am, etc.,

SUSAN ISAACS, M.A., D.Sc.,
Head of Department of Child Development, University of London Institute of Education.

London, W.C.1, Jan. 4.

Social Pathology

SIR,—It is unnecessary to deal at length with what Dr. A. J. Brock and Dr. A. Piney say about the loss of national fertility (*Journal*, January 7, p. 40). Both look back, one to agriculture and the other to a past moral system. However desirable such reversions may seem they are not as a rule the method of evolution. A great trading nation cannot and does not go back to the land: sophisticated society cannot resume the real or imaginary virtues of the dead. These solutions seem to smack of the idealism which to preserve peace and secure happiness merely bids us rid ourselves of fear, hatred, greed, malice, and all uncharitableness. Seeing, then, that I get no fundamental objections to my childlike major premiss that fertility is the result of fertilization, I may progress a little further to tentative social construction. I propose that this nation as a tribe in want of members should subsidize birth rather than death. What we need is "young age pensions": we should encourage the young mother. Untold millions are wasted in keeping alive the insane, the half-dead, and the incurable criminal. More still go in mis-educating the youth of England for any work they are likely to obtain; and who can sum up the waste in positively harmful charity? Should not this money be turned in a fertilizing stream on the national reproductive system to aid the procreation and birth of healthy children? You will observe, Sir, I trust with scientific tolerance, that I say nothing of marriage or legitimacy. Great nations rose, grew, and passed away, as ours must finally pass, with moral systems other than the one on which we pride ourselves but do not, and never did, observe. A young woman, married or unmarried, who produces a healthy child has a call on the tribe for a dower. A national accountant, armed with determination and an axe, could easily provide the means.

I see in this morning's paper that a well-known young Conservative association is concerning itself with our tribal decay. If politicians can possibly be induced to regard politics as a branch of biology these younger men may be the salvation of the country. It is, perhaps, a biological conclusion that when the young Conservative gets to work he is more effective than his opposite number. He may even reform morals radically.

We are dealing here with the logic of events, not with the elementary school logic in which Dr. Piney so kindly gave me a lesson. For the logic of events, properly applied, will show that moral systems die of senility and are finally destroyed by the young—I might even say, in this case, by the unborn.—I am, etc.,

London, Jan. 7. MORLEY ROBERTS.

Christmas Gifts within the Royal Medical Benevolent Fund

SIR,—I am deeply indebted to you for the help which you rendered in allowing my Christmas appeal to be placed before your readers. The response was so generous that the amount subscribed enabled us to give a Christmas gift of 30s. to every one of our regular beneficiaries.

Of the many letters of thanks received the majority refer not only to the great pleasure of an unexpected gift but to the fact that during the exceptionally cold spell of weather in December it enabled more warmth to be obtained either by extra coal or extra money for the gas-meter.

All desired that I should express their heartfelt thanks to the many "unknown friends" who had remembered them and had made the distribution of the gifts possible.

It is this message of gratitude and deep appreciation which I ask you to convey to your readers.—I am, etc.,

THOS. BARLOW,
President.

Royal Medical Benevolent Fund, 11, Chandos Street, London, W.1, Jan. 5.

Should Medical Charity begin at Home?

SIR,—Cervantes should have been an Englishman; there are types among us more quixotic than ever there were in La Mancha, as witness the following experience:

About a year ago a practitioner died who had been a regular subscriber to medical charity: he left an estate large by medical standards, if not by commercial ones. I wrote recently to his widow to ask if she would be good enough to continue her husband's subscription. The answer I got was that she had subscribed ten pounds to Lord Baldwin's fund and regretted, etc.

Part of Lord Baldwin's fund, as we know, will be spent in establishing foreign medical competitors in our midst; with the possible, indeed probable, result of increasing the number of our own people who have to apply to the medical charities for assistance.—I am, etc.,

HENRY ROBINSON,
Chairman, B.M.A. Charities Committee.

London, S.W.7, Jan. 5.

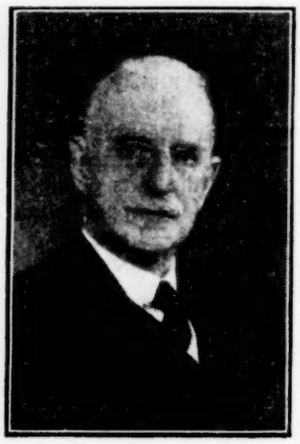
At a reception to be held at B.M.A. House, Tavistock Square, W.C., on Wednesday, January 18, the medical members of the Spanish Medical Aid Committee invite their professional colleagues to meet eight British doctors who have returned from medical service in Spain, on the evacuation of its foreign personnel by the Republican Government. The hosts, the Right Hon. Lord Addison, M.D., and Dr. H. B. Morgan (president and chairman respectively of the committee), will receive the guests, and there will be a conversazione, with light refreshments, from 8.30 to 9.15 p.m. The returned doctors will then make a report on their work, after which questions and discussion will be invited. The almost unique experience which these gentlemen have of medical work under conditions of modern warfare will, it is felt, be of considerable interest and value to the profession. Admission will be by ticket—to be obtained either in advance (from Dr. H. C. Boyde, 85, Freemasons Road, E.16; telephone Albert Dock 1677) or on application to the ticket desk at the hall on the night. Dress optional. Notice of intention to attend will greatly help the organizers.

Obituary

E. B. WAGGETT, C.B.E., D.S.O., M.B.

Consulting Surgeon for Oto-laryngology, Charing Cross Hospital

Mr. E. B. Waggett, the well-known laryngologist, died at his home in London on January 5, aged 72. During the past five years he was a familiar figure in the Cavendish Square district in his arm-propelled chair. Before then he had suffered increasingly severe pain in the legs due to sclerosis of the popliteal arteries, for which both limbs were amputated above the knee. He recorded his experiences in a paper, "Criteria of Intolerable Pain," in the *British Medical Journal* of May 18, 1935. To a friend's criticism that this analysis of varying degrees of acute pain might cause alarm and despondency in those afflicted with similar trouble, he replied that if it made them contemplate early operation, before years of pain and the toxic influence of starved limbs undermined their health and rendered amputation precarious, so much the better. He wrote:



"The clinical picture before operation is that of a man gradually wearing out in strength and spirit, through pain day and night, punctuated with bursts of acute agony which are the source of misery and anxiety to relatives and friends; immediately after amputation the patient rejoices in the sense of the daily access of increasing strength and good spirits."

Born on January 18, 1866, the son of John Waggett, M.D., Ernest Blechynden Waggett was educated at Charterhouse and at Pembroke College, Cambridge, where he won first-class honours in the Natural Sciences Tripos of 1887. From Cambridge he went to study medicine at St. Bartholomew's Hospital, and after taking the English Conjoint diplomas he was house-surgeon at the Royal Free Hospital. He then graduated M.B., B.Ch. and became house-surgeon at Bart's to Mr. Howard Marsh, afterwards professor of surgery at Cambridge. His next appointment was that of pathologist at the Throat Hospital, Golden Square, London, and he was elected assistant surgeon there in 1896. He joined the visiting staff of Charing Cross Hospital as assistant surgeon to the throat and ear department, and eventually became consulting surgeon.

For many years Ernest Waggett was an ardent member of the Auxiliary Forces. He joined the R.A.M.C. Volunteers in 1898, was promoted captain in 1901, and gazetted to the Territorial Force on its creation in 1908. In 1910 he was promoted major, and in August, 1914, was mobilized with the 3rd London (City of London) Field Ambulance; with this unit (renamed later the 85th Field Ambulance) he served in France and in the Salonika Force, doing admirable work until the end of the war. He received the D.S.O. in 1918, the Territorial Decoration in 1919, and was created C.B.E. in 1931, having retained his connexion with the Army Medical Services as consulting surgeon to Queen Alexandra's Military Hospital. Other institutions which he served as laryngologist at one time or another were the Royal Northern Hospital, the Chelsea Hospital, and the Hostel of St. Luke in Fitzroy Square; he had also been surgeon-in-ordinary to H.R.H. Princess Christian.

Waggett joined the British Medical Association in 1895, in which year he acted as honorary secretary of the Section of Laryngology at the Annual Meeting in London. He was vice-president of the Section of Laryngology, Otology, and Rhinology at the Belfast Meeting in 1909, and president of the Section of Laryngology and Otology at the Portsmouth Meeting in 1923. In the Royal Society of Medicine he was an honorary member of the Otological Section and past-president of the Laryngological Section. He had also been president of the United Services Medical Society. He wrote a number of papers on throat and nose surgery for medical journals, and for Latham and English's *System of Treatment* and Hutchison's *Index of Treatment*, and in 1907 published a book, *Diseases of the Nose*. He was one of those who, behind the scenes, actively promoted the holding by the British Medical Association in April, 1919, of a special clinical and scientific meeting in London so that medical and surgical problems of the war might be discussed before the dispersal to their homes of medical officers of the oversea contingents and of the United States Army. He was also a moving spirit in the setting up of the Royal Army Medical Corps memorial window in Westminster Abbey and the decoration of the Golden Book containing the names of those who fell in the war. A gifted amateur draughtsman, with a good sense of colour, he was elected a member of the Pastel Society in 1932. Latterly, with his movements restricted, he got much solace from this pursuit, and was represented by a charming picture at the last exhibition of the Medical Art Society. His many friends looked up to Ernest Waggett as a courageous, loyal Englishman with a high sense of duty and a love of beautiful things.

Mr. Herbert Tilley writes:

In due proportion to their intimacy with Ernest Waggett, so will be the difficulty of his friends in appraising the loss of a distinguished laryngologist and otologist and an always loyal colleague. On the assumption that his services to those special branches of medicine will be the concern of others, perhaps it may be permitted me to mention a few personal characteristics which commanded the respect and admiration of his associates and were a source of inspiration to such as he honoured by his friendship.

He and I met for the first time after graduation from our respective universities in the early nineties, at "The London Throat Hospital" in Great Portland Street, where I was the junior member of the staff and Waggett acted as my dresser. Thus was initiated a bond of comradeship which was never strained and only broken last week by his passing from us. Even in those now far-off years one quickly recognized those high principles which were to be the guides of his life and also a capacity for gauging the practical value of new methods of treatment or of inventions which might influence the daily routine of a doctor's life. With regard to the latter, I understood him to say that he was the first London medical man to drive a motor car. Waggett's devotion to the R.A.M.C. was common knowledge to members of our profession, although many may not know that in order to keep in touch with other similar organizations he not infrequently inspected those of Continental armies during their annual manœuvres. His conviction that our country would be involved in the great war led him to collect and place the necessary kit inside the front door

of his house. When the "call" came he took a taxi and went direct to headquarters.

It was in the "up country" of the Gallipoli campaign where he first experienced painful leg symptoms. These increased in severity and ultimately necessitated the amputation of one leg, and the other after a considerable interval. In spite of such terrible handicaps he continued to take a keen and practical interest in the medical aspects of war and more particularly in supporting the claims for conpensation made by those who had been permanently incapacitated by wounds or disease while on active service between 1914 and 1918. But these and similar activities only reflected the high principles which governed the life of our now lamented friend, although they were sometimes misunderstood by those who did not know him well. On one occasion I happened to mention the name of his brother, Father Waggett of the Cowley Brethren, when Ernest said: "Yes, I teach him religion and he teaches me science!" I have often wondered if there might not have been some truth in that jest.

Although time so often scatters the poppy seeds of oblivion over our memories, it is doubtful if his friends in Harley and Wimpole Streets will ever forget Waggett's cheerful hailing and smiling face as he piloted his wheeled chair and the little rough-haired terrier towards his consulting room in 39, Wimpole Street.

[The photograph reproduced is by Lafayette Ltd.]

GEORGE BARGER, D.Sc., M.D.(Hon.), F.R.S.

The death took place unexpectedly in Switzerland on January 5 of George Barger, F.R.S., regius professor of chemistry in the University of Glasgow. Professor Barger had been in good health when he left this country for a holiday in Switzerland, and his death took place from heart failure. He was born in 1878 and received his early education in Holland, studying later at University College, London, and King's College, Cambridge, from which he went to Brussels as a demonstrator in botany at the university there. In 1903 he became chemist to the Wellcome Physiological Research Laboratories, where he was associated with Sir Henry Dale in work on the active principles of ergot and other pieces of research. In 1908 he was appointed head of the chemistry department of the Goldsmiths' College, University of London, and later professor of chemistry in the Royal Holloway College. During the war he worked as a chemist on the staff of the Medical Research Committee —now Medical Research Council. In 1919 he was appointed professor of chemistry in relation to medicine at the University of Edinburgh, and after almost twenty years' service there he was transferred in 1937 as professor of chemistry at the University of Glasgow.

Professor Barger was universally recognized as one of the two or three leading organic chemists in Great Britain, and he had received many honours from other countries. His high reputation caused his department in Edinburgh to be an active centre of chemical research which attracted students from all over the world. The best-known discovery in this department was the establishment of the structural formula of the active principle of the thyroid gland (thyroxine) and its subsequent synthesis. Later the synthesis of vitamin B_1 was also attained in this laboratory. In 1928 Professor Barger delivered the Baker lectures at Cornell and the Dohme lectures in the Johns Hopkins University, Baltimore, the latter dealing with his work on ergot. His *Organic Chemistry for Medical Students* has gone through two editions, and a Spanish edition was published in 1935. His work *The Simpler Natural Bases* appeared in 1914, *Some Applications of Organic Chemistry to Biology and Medicine* in 1930, and his monograph on *Ergot and Ergotism* in 1931. Among the honours conferred upon Professor Barger were those of Hanbury Medallist of the Pharmaceutical Society, Longstaff Medallist of the Chemical Society, and in 1929 he was chosen as president of Section B of the British Association. He held the honorary degrees of LL.D.Michigan, M.D.Heidelberg, D.Sc.Liverpool, doctor of pharmacy of Lausanne, and doctor of the University of Padua.

THE LATE DR. E. W. GOODALL

Professor M. Greenwood, F.R.S., writes:

As an old pupil and almost life-long friend of E. W. Goodall I should like to add a few words to your admirable notice. It is inevitable that "honours"—whether official or scientific—should be unevenly distributed. A very modest man working in a field the publicity value of which is slight will escape the notice of the best people. That was Goodall's fate. He was the Murchison of our age, and as an epidemiologist much greater than Murchison. He was almost of the rank of Budd, whose life he wrote. Some men who are masters of a branch of knowledge inadequately recognized take their revenge by marking the errors of amateurs. Goodall never did this. I and other statisticians have found him the kindliest and most patient of collaborators. His memory was almost as phenomenal as Macaulay's. When Report No. 137 of the Medical Research Council Series (Scarlet Fever, Diphtheria, and Enteric Fever, 1895–1914) was being compiled, an analysis of Goodall's own experience covering thousands of cases, he was able to correct ambiguities and supplement particulars without reference to documents. He almost seemed to retain in his mind all his clinical experience. We have lost a great man, who to the end seemed so vigorous in body and mind that it is hard to realize he was 78.

Dr. A. P. Cawadias writes:

The loss of E. W. Goodall will be felt intensely by all who strive for a medical art with a wide humanistic outlook. He kept alive the tradition of the humanist physicians who with Thomas Linacre founded modern medicine, the tradition which has endured in this country throughout the centuries. For that reason he was a fine clinician, since the clinical art needs the Hippocratic outlook more than laboratory medicine. His activities, equally divided between epidemiology and history of medicine (a possibly inadequate term for the humanistic and cultural aspect of medicine), gave the stamp to his character as physician. He leaves behind him a definite contribution to the science of epidemic diseases by his work on the epidemic constitution, in which he blended the results of modern analytical research and the conceptions of Hippocrates and Sydenham. Besides its present value this work is full of possibilities for future research on these diseases, too long hampered by an exclusive Pasteurian outlook. He will be remembered as one of the upholders of what Sir William Gull called "the general view" in medicine, and such men are needed in our days of ultra-mechanization. Dignified but modest in his bearing, he had all the qualities of a great academic professor and not those external characteristics that bring success in private practice, which unfortunately are more powerful in influencing medical thought than purely academic work. Up to a point his life was a tragedy, for the lack of an important academic position prevented him from giving all that was in him. However, even so, he succeeded in exerting a definite influence. His retirement was an opportunity for more work, and one or two days before the onset of his last illness he could be seen working actively in the library of the Royal Society of Medicine. May this example of tenacity

inspire those who remain to uphold the spirit of clinical medicine.

Dr. PROSPER ST. LEGER LISTON of Bourton-on-the-Water died very suddenly while visiting a patient on January 2. He belonged to the type of country practitioner whom the people regard as a friend and adviser in realms beyond those of his professional work. His kindness to individuals and his interest in some of the social services of the community were also factors which accounted for the place he held in the affections and respect of those for whom he lived and worked. Dr. Liston was a student of Trinity College, Dublin, and of the Irish Colleges of Physicians and Surgeons. He was awarded gold medals in medicine and surgery. After qualifying in 1893 he practised in Ireland, where, like many of his countrymen, his sporting instincts led to his being both a hunting man, with the Meath Hounds, and a polo player. A serious illness led to his eventual settlement in Cornwall for a period of five years, and in 1908 he went to Penang and remained there, working as a general practitioner, until 1917, when he returned to England to join the R.A.M.C. He was wounded at Cambrai in 1918 and, being invalided out of the Army, returned to Penang via America and Japan. He was in Tokyo when the armistice was declared and was fêted as an English officer in the hotel. Dr. Liston's connexion with Bourton-on-the-Water began in 1923, when he joined Dr. R. B. Stewart, who was already in practice there. He has been a liberal contributor both in service and financially to various of the social welfare organizations, and particularly perhaps to the local branch of the British Legion, of which he was in the second year of his presidency at the time of his death. As a contribution to the beauty of the village, Dr. and Mrs. Liston paid devoted attention to the floral cultivation of their garden, which stretches along the bank of the Windrush, and, from the footpath of the opposite bank, the flowers of the spring and summer have always formed a decorative and much-admired display. Dr. Liston was married first to Bella Mary Farlow, who died in Penang. By her he had four sons, one of whom died in infancy and another was killed at the battle of the Somme in 1917. Both the surviving sons, one of whom is a medical man, served in the war. His second marriage was to Miss Evelyn Mary Mahler, who survives him, and for her the greatest sympathy is felt in her bereavement.—C. J. M.

We regret to announce the death of Dr. JOHN WILLIAM APPLEGATE of Dewsbury, who had been prominent in the local affairs of the British Medical Association, serving as chairman of the Dewsbury Division in 1925–6 and president of the Yorkshire Branch in 1934–5. Born in London, he studied medicine at St. Bartholomew's Hospital and qualified M.R.C.S., L.R.C.P. in 1888. He began work in Yorkshire as house-surgeon at the Dewsbury and District General Infirmary, and then engaged in general practice until two years ago. He was a member of the honorary medical staff of the Infirmary for twenty-five years, afterwards joining the consulting staff and becoming chairman of the medical board and president of the institution in 1935. During the war Dr. Applegate had charge of the base hospital for wounded at Staincliffe, serving with the temporary rank of Major R.A.M.C.(T.); he was also keenly interested in the first-aid movement, and held various offices in the St. John Ambulance Brigade. He was made a justice of the peace in 1932, and in his well-earned retirement from practice devoted much time to magisterial duties. He joined the British Medical Association in 1906, and was also a member of the Leeds and West Riding Medico-Chirurgical Society. The doyen of the profession in Dewsbury, Dr. Applegate was held in high esteem by his colleagues, and his patients were devoted to him. He was for nine years peoples' warden of the parish church, and in 1936 read the lesson at the centenary celebration of Sir Clifford Allbutt's birth.

Medico-Legal

A MENTAL PATIENT'S OLD AGE PENSION

A little time ago the Court of Appeal made an important decision affecting the status of a rate-aided mental patient.[1]

The Lindsey County Council applied last February to the assistant master in lunacy for an order to appoint their public assistance officer as receiver for one of their rate-aided mental patients. The order was granted, and the receiver was directed to lodge in court all sums received by him. The order gave the council a charge on the money in court for any sum due in respect of the patient's maintenance, and provided that the charge would not be enforceable except by leave of the master until the death of the patient, and was to be subject to any order of the master for the application, for the benefit of the patient, of the property charged. The patient was entitled to an old age pension, which was the only money coming into the hands of the receiver, and if he had not been appointed the pension would have lapsed.

The council appealed against the order and asked that it should be varied to provide that the sums lodged in court should be applied to the patient's maintenance.

Judgment of Appeal Court

Sir Wilfrid Greene, Master of the Rolls, delivering a judgment with which Lord Justice Scott and Lord Justice Clauson agreed, would not allow the order to be varied to direct payment of the old age pension in aid of the local rates. He pointed out that previously old age pensions had ceased to be payable when the pensioner became rate-aided, but the law now provided by the Third Schedule of the Widows', Orphans', and Old Age Contributory Pensions Act, 1936, that the pension should not cease to be payable to a person of unsound mind by reason of the circumstance that he was a rate-aided person. The legislature had quite clearly avoided providing for payment of old age pensions to local authorities in aid of rates, whether the person was of sound or unsound mind. Money received for old age pension in respect of a rate-aided patient in a mental hospital fell to be dealt with under the ordinary jurisdiction of the court. The convenient practice had been adopted of appointing the public assistance officer as receiver; this had the advantage that the pension would not lapse, and therefore that the rights of the local authorities were preserved in the same way as the rights of creditors would be preserved under the lunacy jurisdiction. This form of order had been adopted in some 2,000 cases, and his Lordship was convinced that it was properly made. The local authority had certain statutory rights to obtain some reimbursement of its expenses on the maintenance of the patient. The purpose of the order was to reconcile the interest of the lunatic with the just and fair claims of the local authority, the interest of the lunatic being paramount. The rights of the creditors of a person of unsound mind are, he said, always dependent on the interests of the patient, and the local authorities' position is that of a creditor.

The object of the order was, while preserving to them that right, to ensure that the pension, the only property of the patient, should not go straight into the pockets of the local authorities. Had it done so the result would have been that, should the patient recover, he would go out into the world without a penny. That was not a situation which any prudent and responsible administrator of the lunacy jurisdiction could contemplate for one moment, and accordingly the order was made to enable the court to keep its hand on an accumulation of pension money with a view to securing that, should the patient recover, he would be in a position to start life again. If he died in the institution the local authority could apply to be paid out of the fund in court. The misapprehension which appeared to have existed in the minds of the local

[1] *Re* T.R.M. 1938 4 All E.R., 194

authority was that, because they maintained the man out of the rates, they ought to be entitled to receive his old age pension. This was a complete misconception. The object of the order was to build up for the patient something which he would not get for himself: a small capital which would be available on his leaving. The order was an extremely wise and just one.

The decision is valuable as showing that the law regards a rate-aided mental patient as a citizen with rights of his own and not as a mere dependant upon the local authorities.

Universities and Colleges

UNIVERSITY OF LONDON

Recognition of Teachers

The following have been recognized as teachers of the University in the subjects indicated in parentheses:

St. Bartholomew's Hospital Medical College: Dr. H. A. Magnus (Morbid Anatomy). *Guy's Hospital Medical School:* Dr. S. J. De Navasquez (Pathology). *St. Thomas's Hospital Medical School:* Dr. W. J. Griffiths (Chemical Pathology); Mr. R. W. Haines (Anatomy). *Middlesex Hospital Medical School:* Mr. J. P. Monkhouse (Oto-rhino-laryngology). *St. Mary's Hospital Medical School:* Mr. A. C. Frazer (Physiology); Dr. E. R. Williams (Radiology). *Charing Cross Hospital Medical School:* Dr. H. G. E. Arthure (Obstetrics and Gynaecology); Mr. D. Trevor (Orthopaedic Surgery). *Westminster Hospital Medical School:* Dr. R. C. Lightwood and Dr. S. P. Meadows (Medicine). *King's College Hospital Medical School:* Mr. T. Cawthorne (Oto-rhino-laryngology).

Appointments

At a meeting of the Senate held on December 14, 1938, it was reported that R. M. Calder, M.B., had been appointed to the Graham Scholarship in Pathology for one year from November 1, 1938.

Sir Ernest Graham-Little, M.P., and Sir Holburt Waring, Bt., have been appointed members of the Court of Governors of the London School of Hygiene and Tropical Medicine.

Professor Major Greenwood, F.R.S., has been nominated for appointment as a co-opted member of the Court of Governors of the London School of Economics.

Lectures

A course of two lectures on "Pre- and Post-operative Management of Surgical Cases" will be given by Professor E. R. Flint in the physiological lecture theatre of St. Bartholomew's Hospital Medical College on Thursday and Friday, February 16 and 17, at 5.30 p.m. At the first lecture the chair will be taken by Professor J. Paterson Ross.

A lecture on "The Present Position of the Cancer Problem" will be given by Dr. W. E. Gye, F.R.S., director of the Imperial Cancer Research Fund, at St. Thomas's Hospital Medical School on Monday, March 20, at 5 p.m.

A course of two lectures on "The Action of Drugs in Muscular Fatigue and as Circulatory Restoratives" will be given by Professor J. H. Burn at University College on Monday and Wednesday, February 6 and 8, at 5 p.m.

On Wednesday, January 25, at 7.30 p.m., Professor V. H. Mottram will give the first of a course of twelve lectures on "Dietetics and Nutrition" at Gresham College, Basinghall Street, E.C. Tickets and further particulars may be obtained from the University Extension Registrar, Senate House, University of London, W.C.1.

Dr. Maitland Radford, medical officer of health for St. Pancras, will deliver a lecture on "Slum Clearance" at University College, Gower Street, W.C., on Wednesday, March 8, at 7.30 p.m. The lecture is open to the public without fee or ticket.

The following candidates have been approved at the examination indicated:

M.D.—*Branch I (Medicine):* R. F. Clarke, J. G. Clothier, J. H. Cobb, P. C. C. de Silva, G. G. Gillam, F. J. D. Knights, K. A. Latter, E. Samuel, R. N. Tattersall. *Branch II (Pathology):* R. G. Macfarlane (University Medal). *Branch III (Psychological Medicine):* Joyce McConnell. *Branch IV (Midwifery and Diseases of Women):* J. E. Giesen, Nora L. Keevil, E. R. Rees, C. G. Roworth, Mary G. Tate, Eileen M. Whapham. *Branch V (Hygiene):* M. Markowe.

UNIVERSITY OF GLASGOW

We are informed by Professor Emile de Grósz that the lecture on "The Surgery of the Eye in Hungary," which was announced in this column on December 31, 1938, as to be given at the Tennent Memorial Institute, Glasgow, on January 18, will be delivered by him on April 25.

UNIVERSITY OF WALES

The following candidates have been approved at the examination indicated:

D.P.H.—*Part I:* Beryl Badham, R. T. Bevan, D. J. Davies, C. T. Jones, H. R. Stubbins, A. J. Thomas.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

The course of lectures for 1939 is arranged as follows: January 16, Professor Cecil A. Joll, The pathology, diagnosis, and treatment of Hashimoto's disease (struma lymphomatosa); January 18, Professor J. Paterson Ross, The effects of radium on carcinoma of the breast; January 20, Professor A. J. Gardham, Classification of new growths of the mouth in relation to treatment and prognosis; January 27, Professor E. W. Riches, Hydronephrosis: the results of conservative treatment; January 30, Professor H. T. Simmons, Relapse following sympathectomy; February 1, Professor A. L. d'Abreu, Congenital cysts of the lung and pleura; February 6, Professor F. J. Sambrook Gowar, The post-operative complications of pulmonary lobectomy: a clinical and experimental study; February 8, Professor Ronald Edwards, Studies in experimental pneumonectomy and the development of a two-stage operation for the removal of a whole lung; February 10, Professor J. H. Mulvany, A differentiation in the mechanism, symptomatology, pathology, and treatment of two types of exophthalmos occurring in association with thyrotoxicosis. All the above lectures begin at 5 p.m. On February 14, at 4 p.m., Mr. W. Sampson Handley will deliver the Hunterian Oration.

ROYAL COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS

The second William Blair-Bell Memorial Lecture will be delivered by Mr. Alan Brews on "Hydatidiform Mole and Chorion Epithelioma" at the College House, 58, Queen Anne Street, W., on Friday, January 27, at 5.30 p.m. It is hoped that as many Fellows and Members as possible will attend; registered medical practitioners not members of the College will also be welcomed.

The Services

DEATHS IN THE SERVICES

Lieutenant-Colonel HORACE COCKS, R.A.M.C. (ret.), died at Petersfield on January 2, within a month of his eightieth birthday. He was born at Shipdham, Norfolk, on January 31, 1859, and was educated at Edinburgh University, where he graduated M.B., C.M. in 1883. After filling the post of house-surgeon at Preston Royal Infirmary, he entered the Army as surgeon on January 30, 1886. He became lieutenant-colonel after twenty years' service and retired on January 4, 1913. He rejoined on January 15, 1916, for service in the war of 1914–18. After the war he was employed as a deputy commissioner of medical services in the Cardiff area. He had been a member of the British Medical Association for thirty-two years.

Major HENRY PRIESTLEY BIRCH, R.A.M.C. (ret.), died at Ealing on January 2, aged 79. He was born in London on December 24, 1859, and was educated at University College Hospital and took the M.R.C.S. and L.R.C.P. in 1882. He entered the Army as surgeon on February 2, 1884, became major after twelve years' service, was placed on half-pay on account of ill-health on September 14, 1903, and retired on February 17, 1904. He served in the Sudan in the Nile campaign of 1884–5, receiving the Egyptian medal with clasp and the Khedive's bronze star; and in South Africa in 1900–2, when he took part in the relief of Kimberley and in the operations in the Orange Free State, including the actions of Paardeberg and Dreifontein, receiving the Queen's medal with three clasps and the King's medal with two clasps. He rejoined for service in the war of 1914–18 from August 6, 1914. He had been a member of the British Medical Association for forty-eight years.

No. 52

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended December 31, 1938.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for : (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland. Median values for the last 9 years for (a) and (b).

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for : (a) The 126 great towns (125 in 1937) in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases ; a blank space denotes disease not notifiable or no return available.

Disease	1938					1937 (Corresponding Week)					1929-37 (Median Value Corresponding Weeks	
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)	(a)	(b)
Cerebrospinal fever	24	4	6	1	—	35	2	7	4	—		
Deaths		1	1				1	—				
Diphtheria	1,096	129	217	54	13	1,417	175	218	90	68	1,107	163
Deaths	35	6	8	3	—	43	8	3	7	1		
Dysentery	13	3	9		—	247	77	53		—		
Deaths				—	—				—	—		
Encephalitis lethargica, acute	5	—	1		—	1	—	—		—		
Deaths		3					2					
Enteric (typhoid and paratyphoid) fever	34	4	4	3	3	34	7	4	7	24	23	
Deaths	1	—	—	1	—	7	1	—	—	—		
Erysipelas			60	11	9			105	10	8		
Deaths		—					—					
Infective enteritis or diarrhoea under 2 years	51	16	8	7	4	72	17	10	7	5		
Deaths												
Measles		17	8		3			481		406		
Deaths	3	—	—	—	—	45	7	4	2	2		
Ophthalmia neonatorum	76	4	36		—	104	6	30		—		
Deaths												
Pneumonia, influenzal*	1,131	122	16	14	21	1,648	175	24	9	14	1,080	140
Deaths (from influenza)	89	8	8	7	6	59	10	13	1	2		
Pneumonia, primary			317	12				350	21			
Deaths		26		28	20		23		42	26		
Polio-encephalitis, acute	1	1				—	—					
Deaths		—					—					
Poliomyelitis, acute	16	4	2	1	—	6	1	1		—		
Deaths		—					—					
Puerperal fever	4†	4	13		—	5†	5	13	1	1		
Deaths		—					1‡					
Puerperal pyrexia	137	7	12		4	158	12	23		1		
Deaths												
Relapsing fever	—	—			—	—	—	—		—		
Deaths												
Scarlet fever	1,572	100	286	55	75	2,383	188	523	92	67	2,059	241
Deaths	6	—	1	—	1	7	—	3	1	—		
Small-pox	—	—	—		—	—	—	—		—		
Deaths	—	—		—	—	—	—		—	—		
Typhus fever	—	—	—	—	—	—	—	—	—	—		
Deaths				—	—				—	—		
Whooping-cough		149	234		15			22		4		
Deaths	7	1	12	1	1	19	3	1	4	1		
Deaths (0-1 year)	431	92	83	37	33	520	100	112	42	40		
Infant mortality rate (per 1,000 live births)	71	76				87	83					
Deaths (excluding stillbirths)	6,130	1,137	826	308	229	6,330	1,282	818	248	204		
Annual death rate (per 1,000 persons living)	15.1	14.5	16.8	18.8	20.3	15.6	16.1	16.7	16.9	18.1		
Live births	5,099	932	863	277	207	5,790	1,166	918	360	231		
Annual rate per 1,000 persons living	12.5	11.9	17.6	20.9	18.3	14.3	14.7	18.8	24.5	20.5		
Stillbirths	219	24				237	34					
Rate per 1,000 total births (including stillborn)	41	25				39	28					

* Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

† After October 1, 1937, puerperal fever was made notifiable only in the administrative county of London.

‡ Death from puerperal sepsis.

EPIDEMIOLOGICAL NOTES

Acute Poliomyelitis

During the week notifications of acute poliomyelitis in England and Wales fell to nearly one-half the number notified in the previous week: this is the largest decrease since the epidemic began in the first week of July last year. It is perhaps significant that the decline of the disease has coincided with the recent spell of exceptionally cold weather. The 16 cases notified in England and Wales occurred in: London 4 (Chelsea, Deptford, Poplar, and St. Marylebone 1 each); Glamorgan 3 (Cardiff 3); Berkshire 2 (Easthampstead 2); Southampton 2 (Basingstoke 2); Surrey 2 (Haslemere and Hambledon 1 each); and 1 each in Gloucestershire (Bristol), Hertfordshire (Bushey), and Sussex (Chanctonbury).

Typhoid in Essex

Typhoid fever appears to be on the increase in England and Wales, notifications being 34, compared with 29, 24, 28, and 31 in the four immediately preceding weeks. In the county of Essex 13 cases were notified, or more than a third of the total —6 in West Ham, 5 in East Ham, 1 each in Southend and Chelmsford. Eleven of the cases belong to an outbreak in the adjacent boroughs of East and West Ham, in which at the time of going to press 39 cases have been notified with 4 deaths. As the cases have appeared in a limited district it is possible that the source of infection is contaminated food.

Influenza

Deaths from influenza in England and Wales during the week under review were more than double those reported in the previous week, while in London the number was eight times greater. Increases were also noted in Scotland, Eire, and Northern Ireland. The largest number of deaths were reported in Liverpool 13, London 8, Hull 6, and 3 each in Birkenhead, Bradford, and Manchester. In Liverpool, where prevalence was unusually high, the epidemic was ascribed to the quick change of weather recently encountered, and among preventive measures recommended by the public health authorities were the wearing of warm clothing and sound footwear, the provision of adequate ventilation in working and sleeping rooms, and the avoidance of unnecessary travel and assembly in crowded places.

Measles and Whooping-cough

The well-known observation that epidemics of measles and whooping-cough alternate is illustrated in the figures for Scotland in the week under review. Two hundred and thirty-four cases and 12 deaths from whooping-cough were recorded, compared with 22 cases and 1 death in the corresponding week last year; while there were 8 cases of measles and no deaths, compared with 481 cases and 4 deaths last year. As notification of measles and whooping-cough was not applied generally in London until October 1, 1938, comparative figures for the two years are not available, but the numbers notified during the week (149 whooping-cough and 17 measles) are suggestive that the same holds true for London.

Cholera

China.—The most recent information from China indicates that the epidemic of cholera declined during October in the provinces of Shansi, Shensi, and Honan, and in the provinces of Kwangsi, Kwangtung, and Fukien during November. In the province of Honan, which was most severely affected, widespread vaccination of the town population led to a rapid disappearance of the disease towards the end of August, but it continued to spread in the rural areas, especially such as were near large towns or on the Peiping–Hankow railway. The public health authorities were satisfied that water did not play an exclusive or even predominant part in the spread of the disease in this province.

British India.—Recent reports show a decline in cholera morbidity in most of the provinces of India. In Bengal, where the seasonal maximum is usually reached in December, the cases notified in the week ended December 17 were 3,062, compared with 3,741 a fortnight previously. In Assam 1,464 cases were notified during the three-week period ended December 24, compared with 3,369 cases in the preceding three-week period. During the whole of December no cases were reported in the provinces west of the United Provinces, and the last cases notified in the frontier provinces occurred in the week ended November 12. In Madras Presidency, on the other hand, where the peak is usually reached in January, 146 cases were recorded in the three-week period ended December 24, compared with 81 during the previous three weeks.

Medical News

A meeting of the Kensington Medical Society will be held at St. Mary Abbots Hospital, Marloes Road, W., on Wednesday, January 25, at 8.30 p.m., when Dame Louise McIlroy and Professor James Young will open a discussion on "Diet in Pregnancy."

The annual meeting of the Royal Microscopical Society will be held at B.M.A. House, Tavistock Square, W.C., on Wednesday, January 18, at 5.30 p.m., when Mr. J. E. Barnard, F.R.S., will deliver his presidential address on "Towards the Smallest Living Things."

The Hunterian Society gives notice that, owing to unforeseen circumstances, it has been found impossible to hold the Hunterian Lecture on January 16. Professor Emile de Grósz of Budapest will deliver this lecture, on "The Problem of Glaucoma," at the Mansion House on April 17, at 9 p.m. The annual general meeting of the society will now be held on May 8 at Simpson's Restaurant, Cheapside, E.C.

The London Jewish Hospital Medical Society has arranged a symposium on "Points of View" to be held at the London Jewish Hospital, Stepney Green, E., on Thursday, January 26, at 3.45 p.m. Sir Maurice Cassidy will discuss "The Consultant Looks upon the Practitioner" and Dr. J. Snowman "The Practitioner Looks upon the Consultant."

A meeting of the Medico-Legal Society will be held at 26, Portland Place, W., on Thursday, January 26, at 8.30 p.m., when a paper will be read by Dr. Kenneth McFadyean on "The Death of Edwin Bartlett."

A second conference of representatives of medical staffs of London voluntary hospitals will be held at B.M.A. House, Tavistock Square, W.C., on Friday, January 27, at 5 p.m., when the amended contributory scheme for persons whose incomes are just over hospital income limits, as issued by the London Voluntary Hospitals Committee to boards and committees of management of London voluntary hospitals, will be considered.

The centenary of the death of Per Henrik Ling (1776–1839), the Swedish pioneer in physical training and medical gymnastics, was celebrated in London on January 3 by a dinner of the Ling Physical Education Association, which was attended by Mr. Kenneth Lindsay, Parliamentary Secretary to the Board of Education. The Swedish Minister and Miss M. Stansfeld, principal of the Bedford Physical Training College, eulogized Ling's work for physical education, and Professor Winifred Cullis recalled the Ling Association's rapid growth since its foundation in 1899.

The new department for rheumatism and arthritis established at the Hospital of St. John and St. Elizabeth under the aegis of the Empire Rheumatism Council was declared open by Lord Horder on January 7. In addition to a six-bedded and a two-bedded ward there is an occupational therapy room, two electrical rooms, and one for hydrotherapy. There is also a laboratory, where Dr. C. B. Dyson is already working as full-time research worker for the Empire Rheumatism Council.

On December 22, 1938, the French Minister of Public Health inaugurated the new laboratories of the Pasteur Institute at Garches, a suburb of Paris. On this occasion Professor Gaston Ramon, of anatoxin fame, was invested with the insignia of Commander of the Legion of Honour. It was recalled that Louis Pasteur in 1884 installed himself at Garches to pursue his studies on rabies.

Sir Frank E. Smith, F.R.S., will relinquish on January 31, 1939, his appointment as Secretary to the Committee of the Privy Council for Scientific and Industrial Research, and will be succeeded by Professor E. V. Appleton, F.R.S.

Professor Jules Bordet, director of the Pasteur Institute of Brussels, has been awarded the Grand Cross of the Legion of Honour.

Professor Sieur has been elected president of the French Academy of Medicine for 1939 and Professor Louis Martin vice-president. Professor Achard remains secretary-general.

Fifteen more names have been added to the memorial erected by the German Roentgen Association at Hamburg in commemoration of the roentgenologists and radiologists who have sacrificed their lives to science.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone, unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Secretary, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

ADVERTISEMENTS.—All communications should be addressed to the Advertisement Manager (office hours 9 a.m. to 5 p.m.). Orders for copies of the *Journal* and communications with reference to subscriptions should be addressed to the Secretary, B.M.A. House.

The TELEPHONE NUMBER of the British Medical Association and the *British Medical Journal* is EUSTON 2111.

The TELEGRAPHIC ADDRESSES are

EDITOR OF THE *BRITISH MEDICAL JOURNAL*, *Aitiology Westcent, London.*

SECRETARY, *Medisecra Westcent, London.*

The address of the B.M.A. Scottish Office is 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh;* telephone 24361 Edinburgh), and of the Office of the Cumann Doctúirí na h-Eireann (I.M.A. and B.M.A.), 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin;* telephone 62550 Dublin.)

QUERIES AND ANSWERS

Income Tax

"H. S." inquires as to the appropriate wording of "a certificate of deduction of income tax" from a yearly payment.

*** A small supply of the appropriate forms of certificate will be forwarded by the local inspector of taxes on request. The official number of the form is R 185.

Expenses of Practice

"M. S." inquires as to the advisability of deductions for (*a*) expenses of postgraduate course (£6 6s.) and examination (£21), and (*b*) on payment, to the extent to which it was not covered by insurance, of a claim for damages arising out of a wrong prescription.

*** (*a*) There would seem to be no legal claim in respect of the examination fee; so far as the "course" is concerned there may be some doubt on the point, but the general principle is that the expense of *improving* professional skill and knowledge is not allowable. (*b*) The amount of the payment not covered by insurance *is* allowable.

LETTERS, NOTES, ETC.

True Social Medicine

Dr. C. LUNDIE (Durban) writes: Your annotation on bio-economics in the *Journal* of November 19 (p. 1051) is interesting and instructive. I cannot help feeling that a good beginning for the reforms which Mr. Yahuda stipulates as essential for "the stability of human society" could be made by the institution of a "true social medicine," such as I sketched in the *Supplement* of December 28, 1935 (p. 283). Since that date schemes of social medicine, as nearly approximating to the "true social medicine" sketched by me as anything not sponsored by the Government could be, have been established in South Africa by (1) the United Banks, (2) the Shell Oil Company, and (3) Durban City Employees. All are recognized by the profession officially and are a boon both to members of the societies and to members of the profession. When will any Government emulate such schemes?

Syncope while Bathing

Dr. F. GOURLAY (Ontario) writes: Last summer when bathing in Lake Ontario in water just under 60°, I had a curious and unpleasant experience. After swimming about quite happily in three or four feet of water I seemed, without the slightest warning, to be seized by the head by an irresistible force and pushed under. The thought flashed through my mind, "This is the end"; then I seemed to be at the bottom and did not know where the surface was. The next thing I knew was that my son, who happened to be near, was holding me up, and I was able to walk ashore with almost no assistance. He tells me that I was only just under the surface face downwards, but "was splashing so wildly he thought I had a fit." I may say I am 70 and never subject to epilepsy in either form. Was it cardiac? The suddenness and the wild splashing look more like "grand mal" with an aura. I may say I have bathed in the same place three or four times since and had no more experiences, only I have not taken such long swims without a rest. There was no question of an overfull stomach; I had had only a light meal four hours before bathing. I only swallowed one mouthful of water, but would no doubt have drowned if my son had not been standing near. It would be interesting to hear from anyone who has had a similar experience. I had no cramp.

Sterilization, Abortion, and the Law

Dr. B. DUNLOP (Putney, S.W.) writes: Lord Dawson usefully asked in a speech at the annual dinner of the Medico-Legal Society (*British Medical Journal*, December 24, 1938, p. 1325): "In the case of persons of mature age who wish to marry, one of them being unfortunately liable to transmit disease, why should not he or she, on request, be allowed to be sterilized?" He might well have gone further and asked why any overburdened parent should not be allowed to be sterilized. There is no law against sterilization, and eugenists and other humanitarians should get a Government pronouncement that neither the ancient law of maiming nor any other existing one can be construed as such. As to the law of abortion, its abolition or drastic amendment should be urged by all who do not believe that the foetus has a soul, and who therefore consider that it is merely a potential life and not affected by the decalogue. Our population will continue to deteriorate eugenically until one or both of the surgical methods of family limitation be made freely available to poor parents.

A Warning

"M.B., B.Ch." sends the following note of caution from Staffordshire: Any doctor who is called upon by a young, darkish, eager salesman, purporting to represent a firm of manufacturers in Birmingham, would do well to ring up the police. This adventurer offers to sell a type of surgical bandage, and prefers cash with the first order. Although he gives a receipt the goods never arrive, and inquiries show that there is no such company at the address stated and the telephone number was given up some time ago.

Corrigendum

In the leading article "Livelihood and Mortality" (January 7, p. 22) one figure was incorrectly given. In the fifteenth line of the third paragraph the range of mortality of married women should have read "from 19 per cent. below to 13 per cent. above standard."